

Fig. PA1: MAGNET-Automated Contracting System

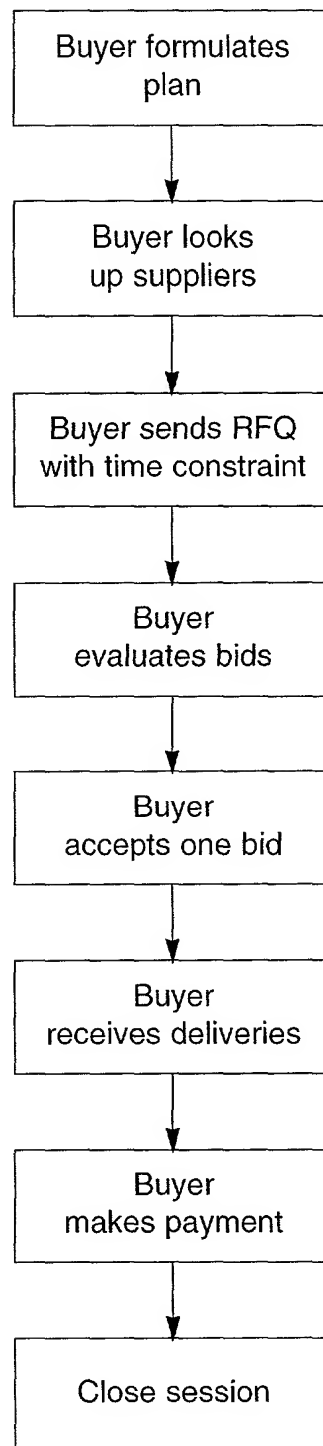


Fig. PA2: Fishmarket

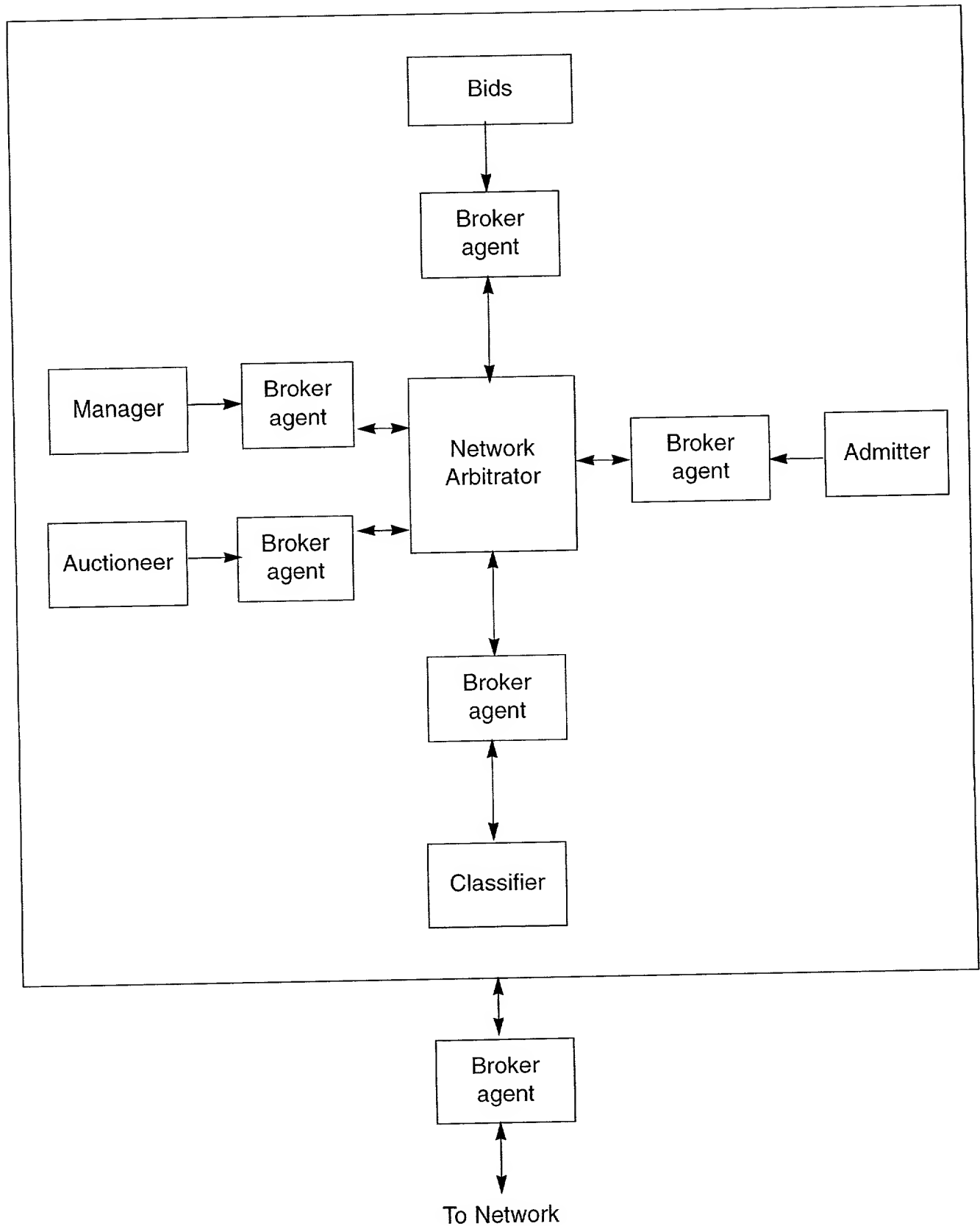
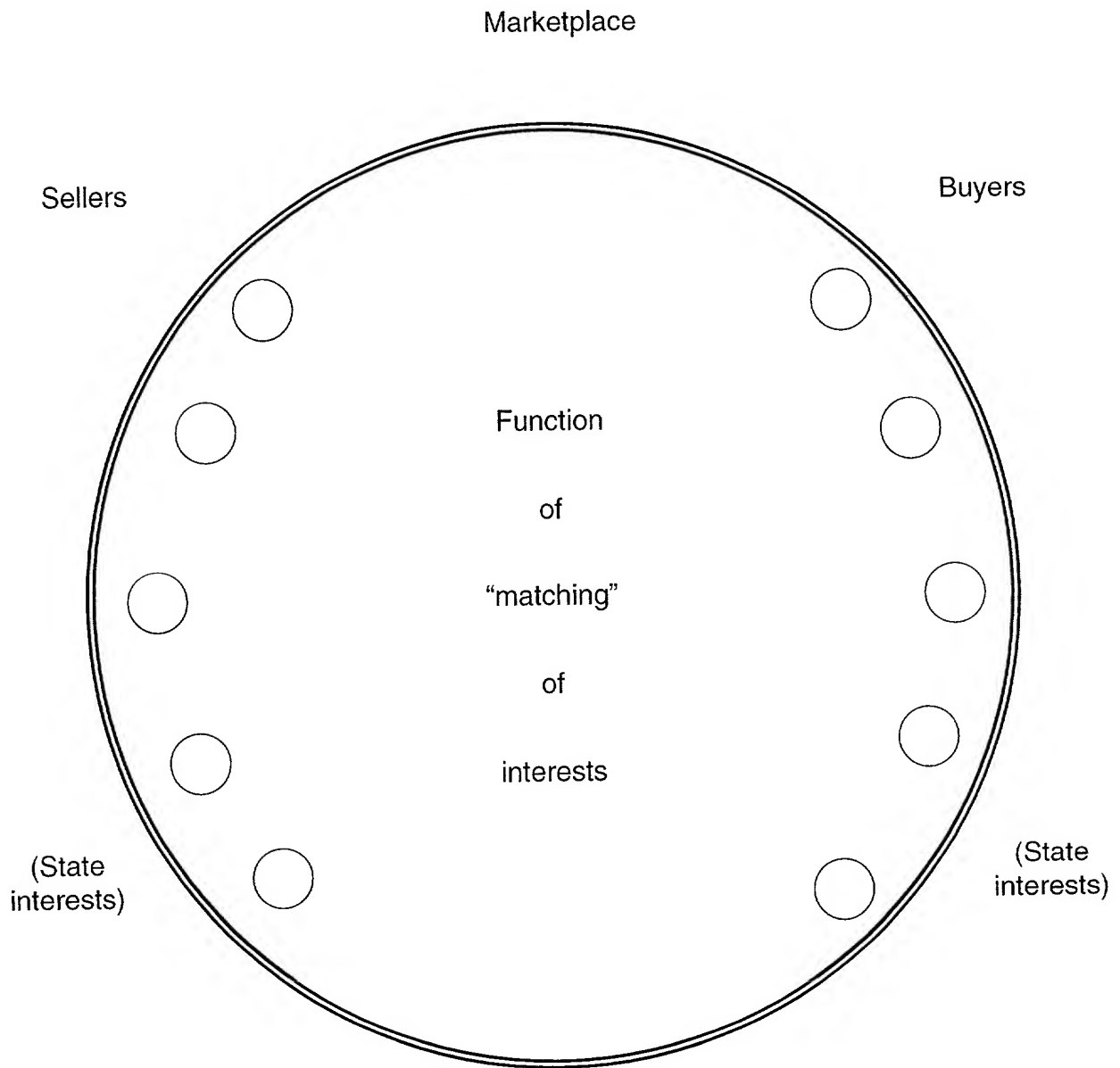


Fig. PA3: Kasbah Marketplace



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Fig. PA4A: Tete-a-tete (I): Integrative Negotiation

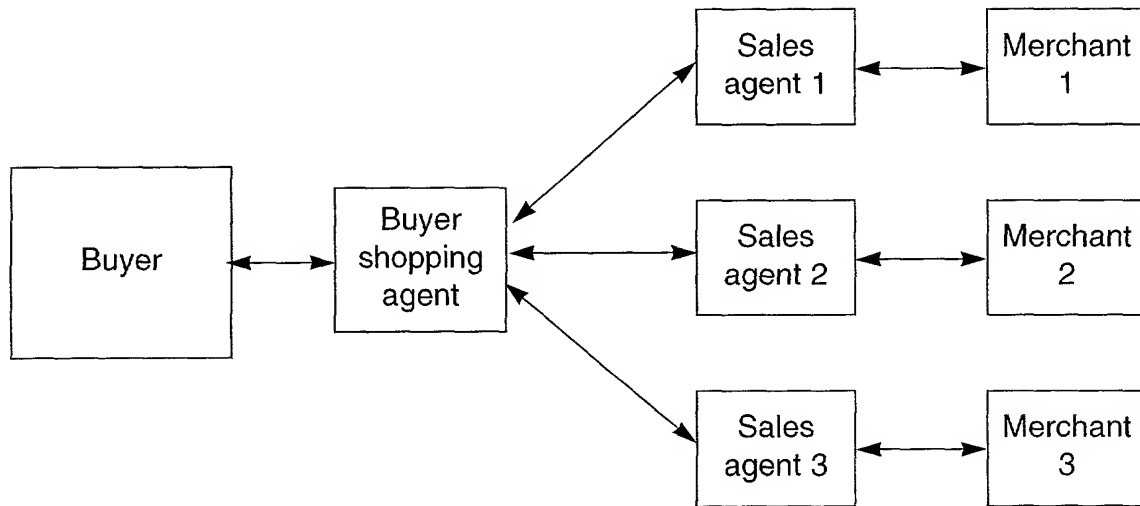


Fig. PA4B: Tete-a-tete (II): Bilateral Negotiation

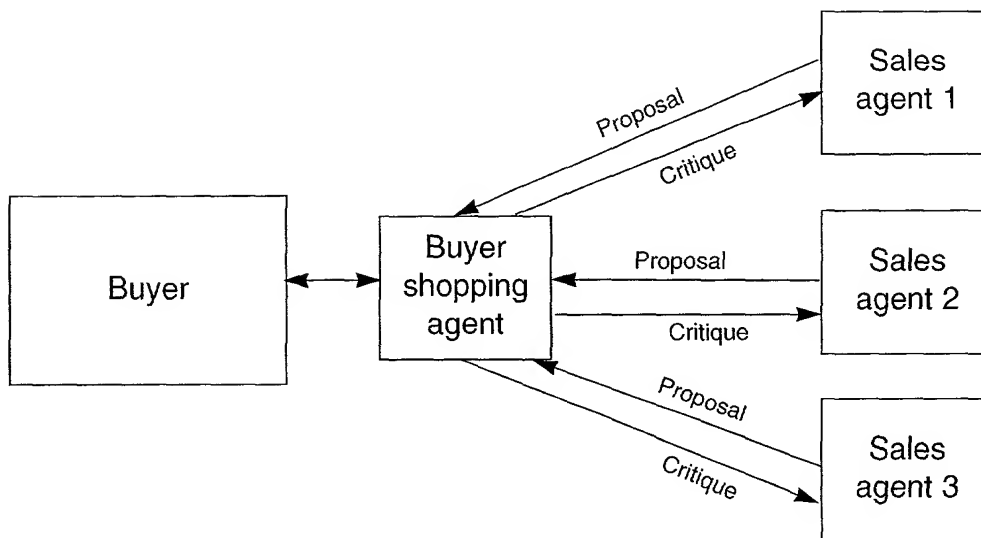


Fig. PA5: Contract Net-4 Stages of the Contract Net

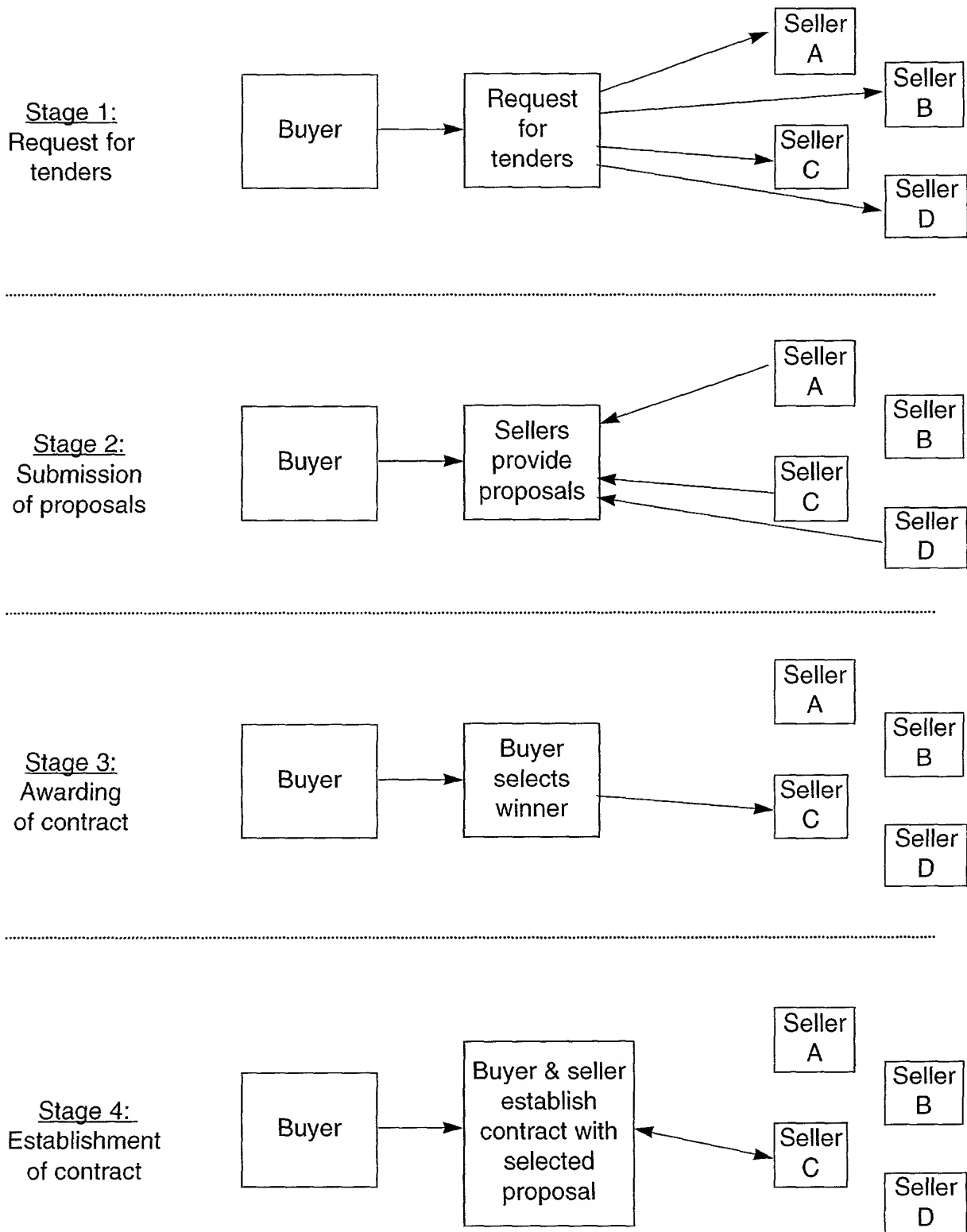
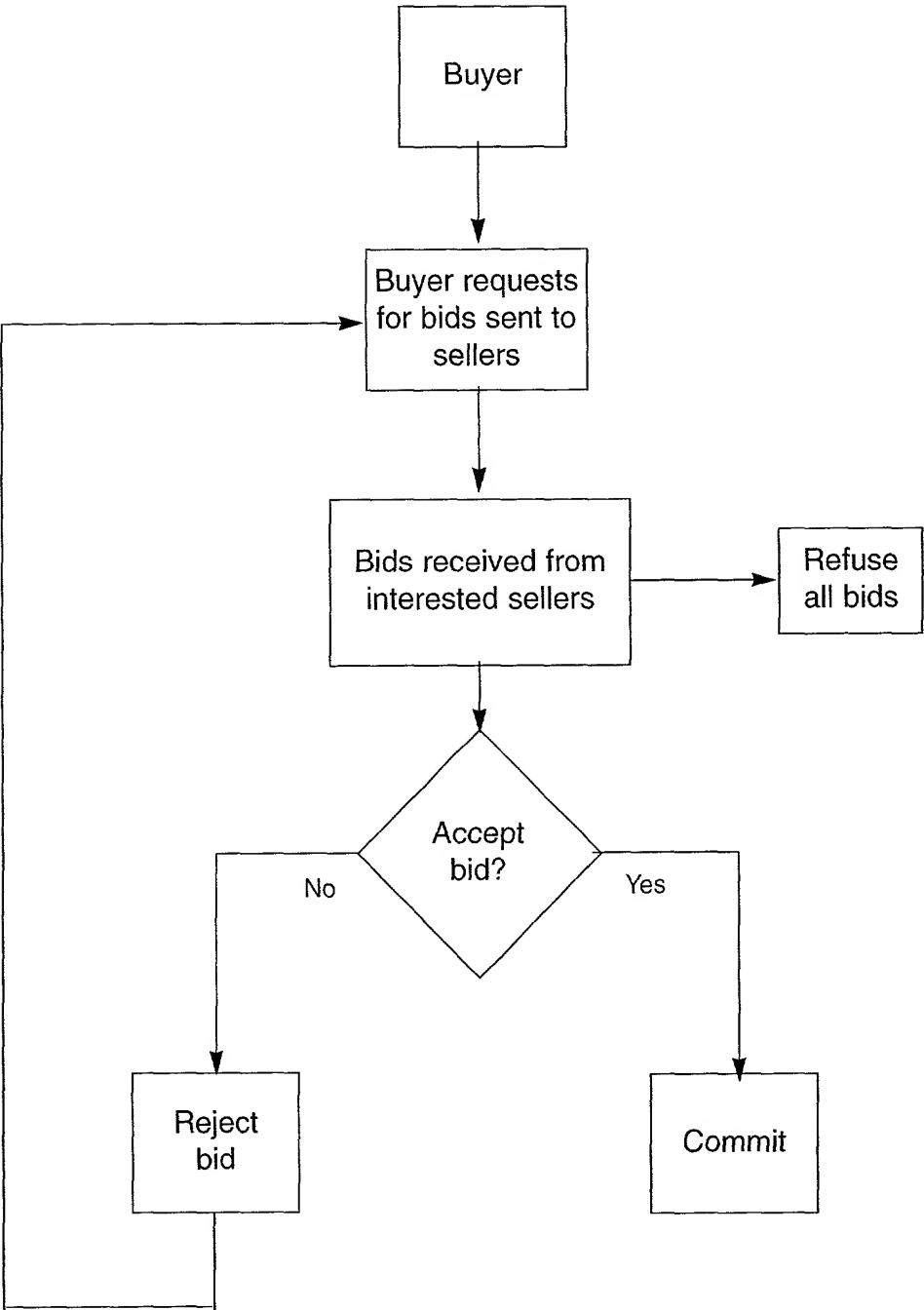


Fig. PA6: Flow Chart Of Contract Net Protocol



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Fig. PA7A: EDI As A Paper Replacement Technique

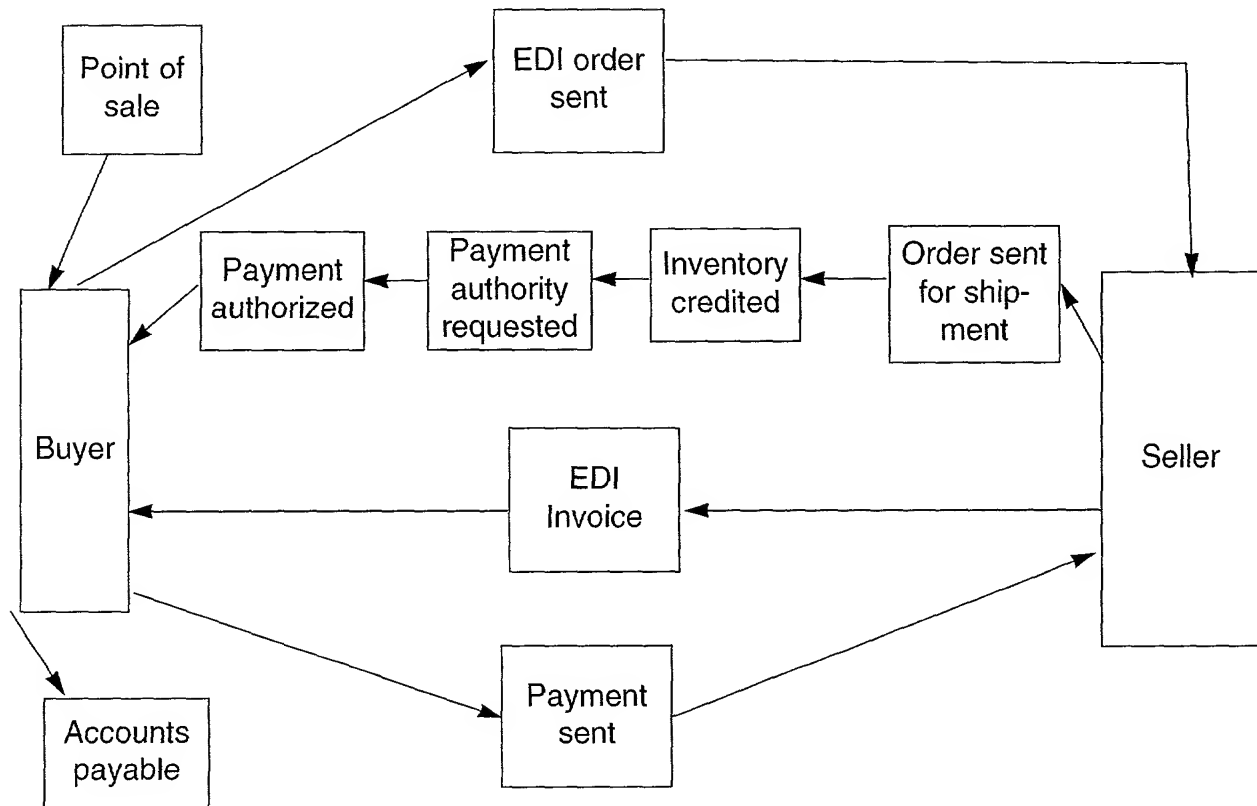
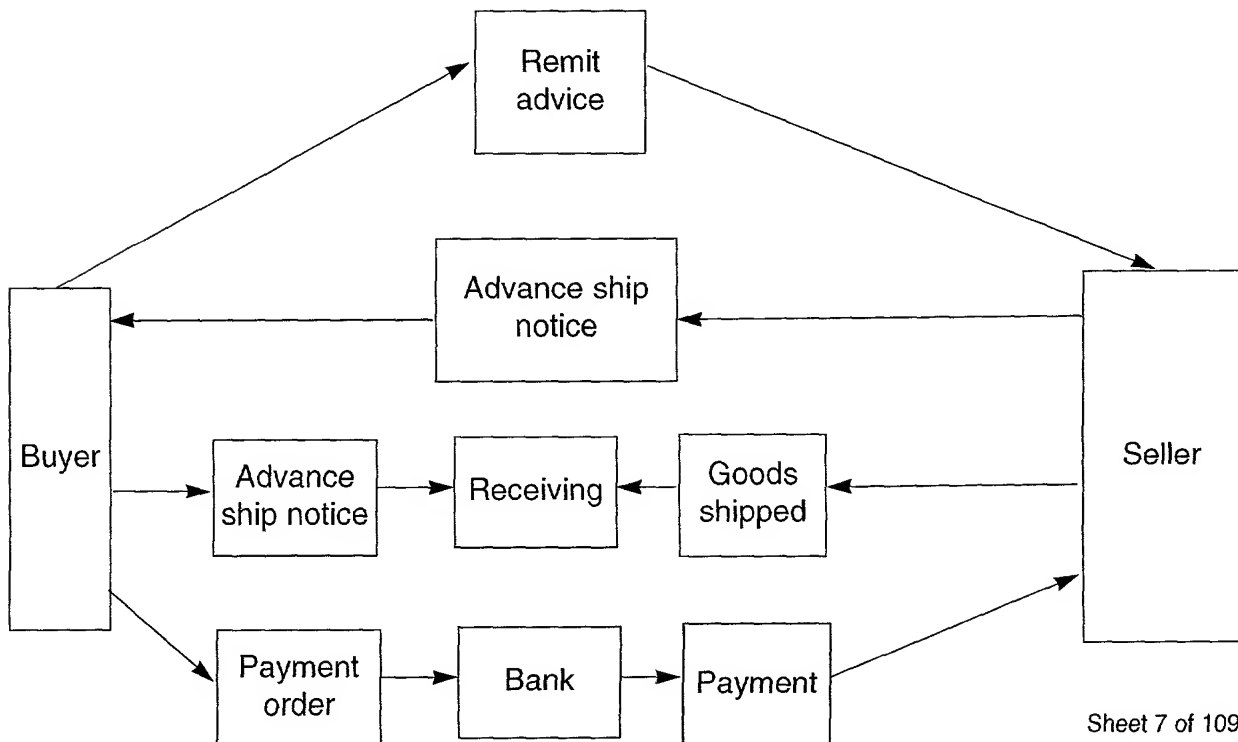


Fig. PA7B: EDI As A Process Elimination Technique



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Fig. PA8: ECN (Electronic Communications Network)

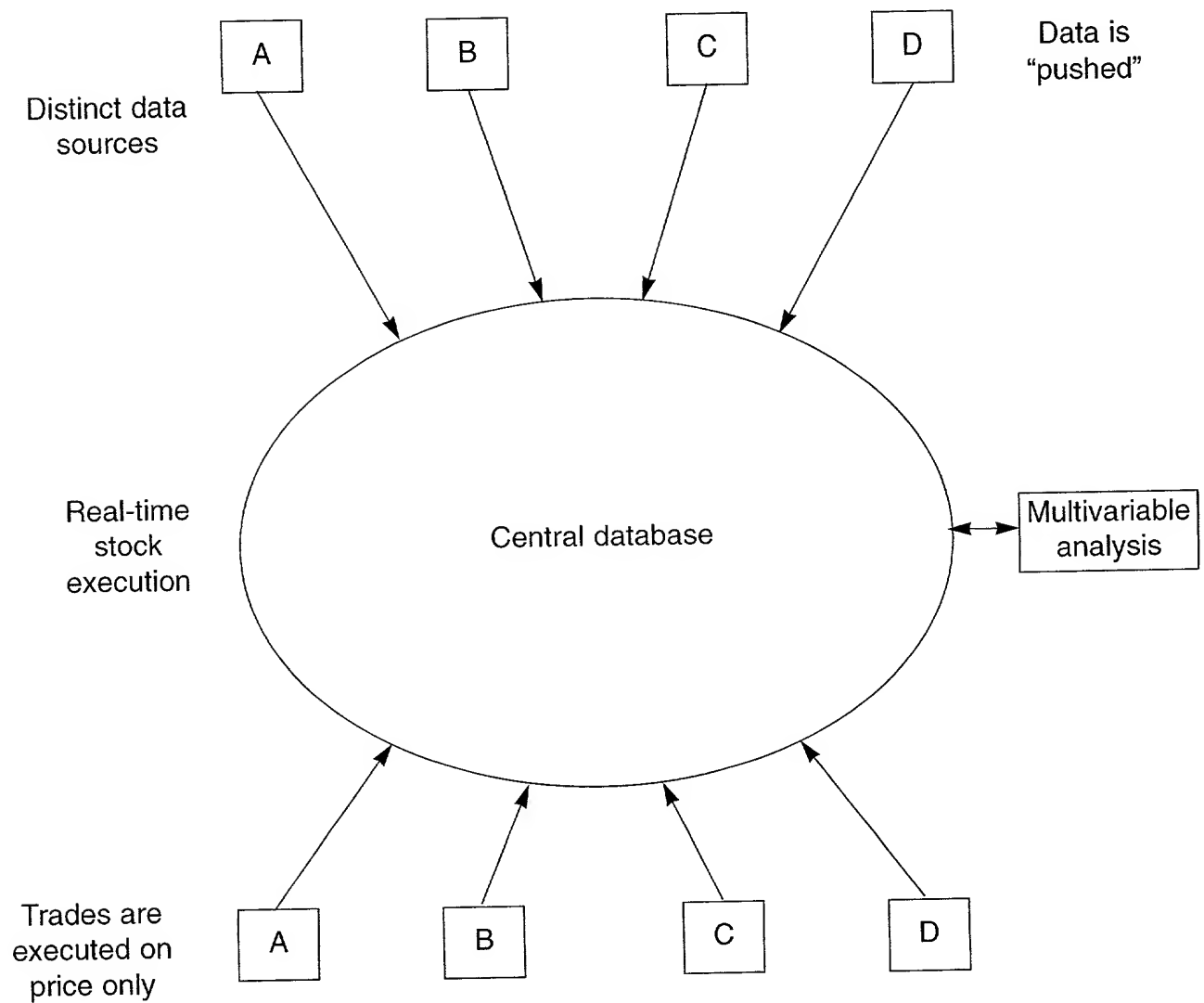


Fig. PA9A: Intermediated Demand-Initiated Procurement System

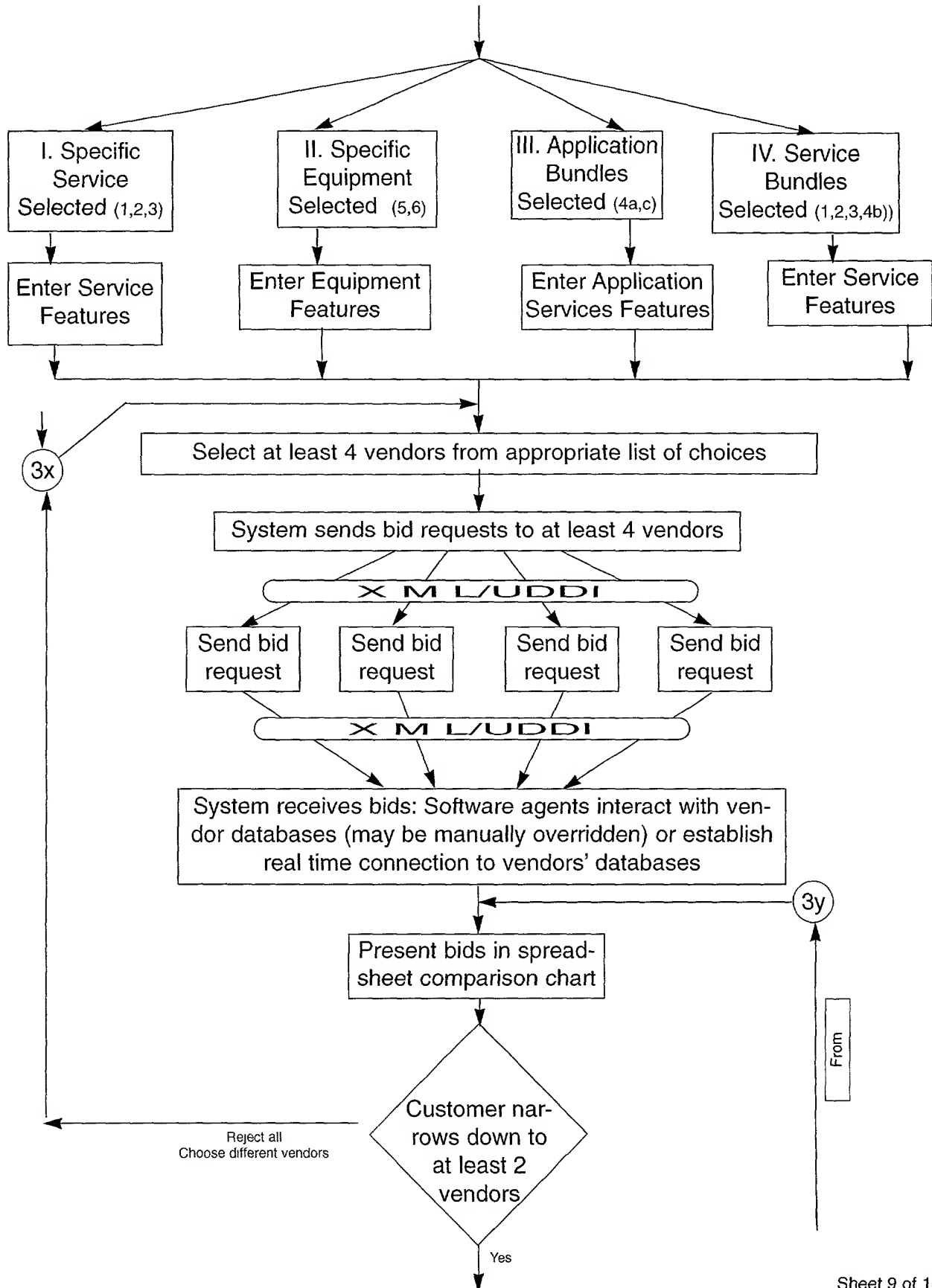
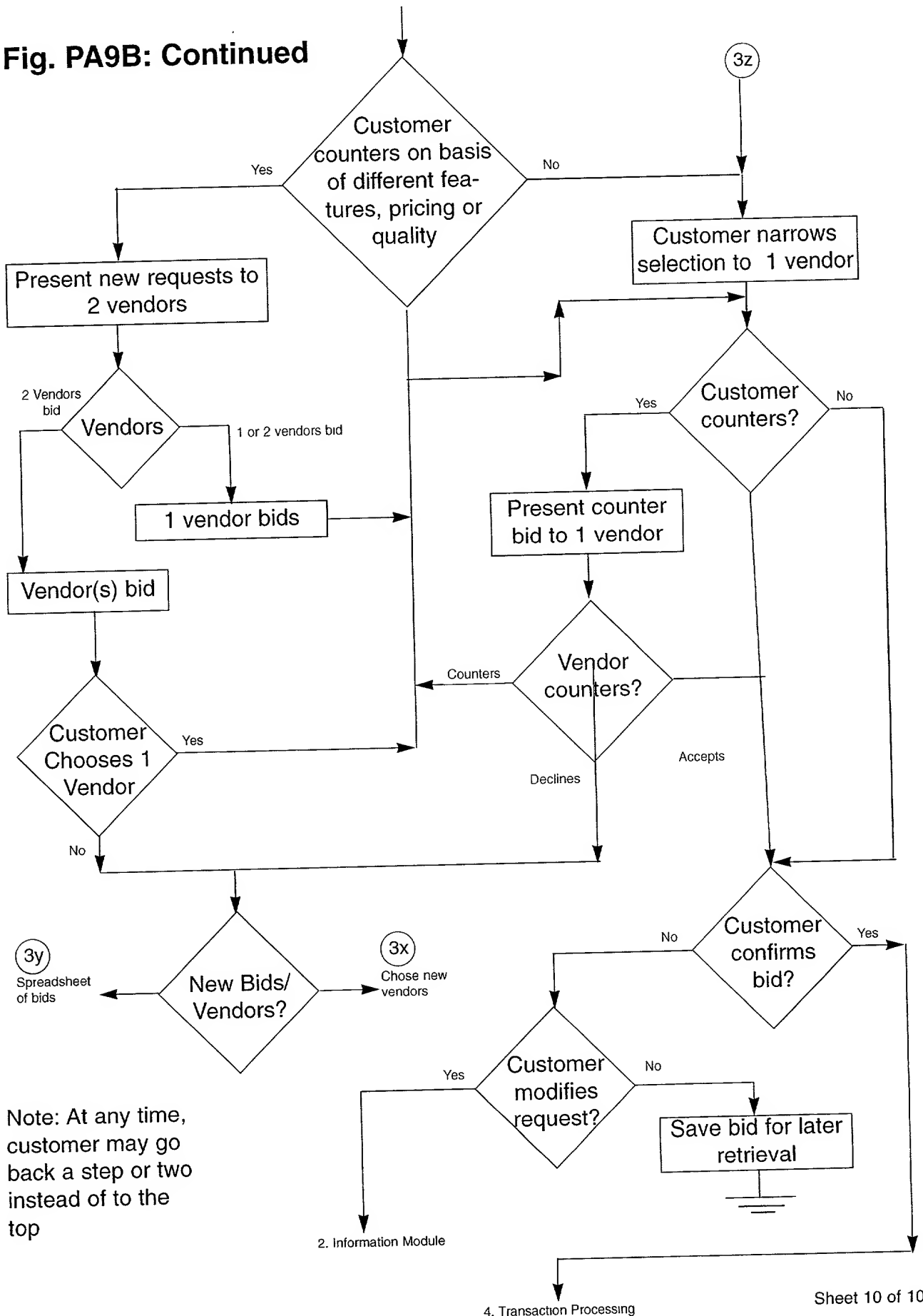


Fig. PA9B: Continued



Note: At any time, customer may go back a step or two instead of to the top

2. Information Module

4. Transaction Processing

Fig. PA10: Traditional Supply Chain & Customer Relationships

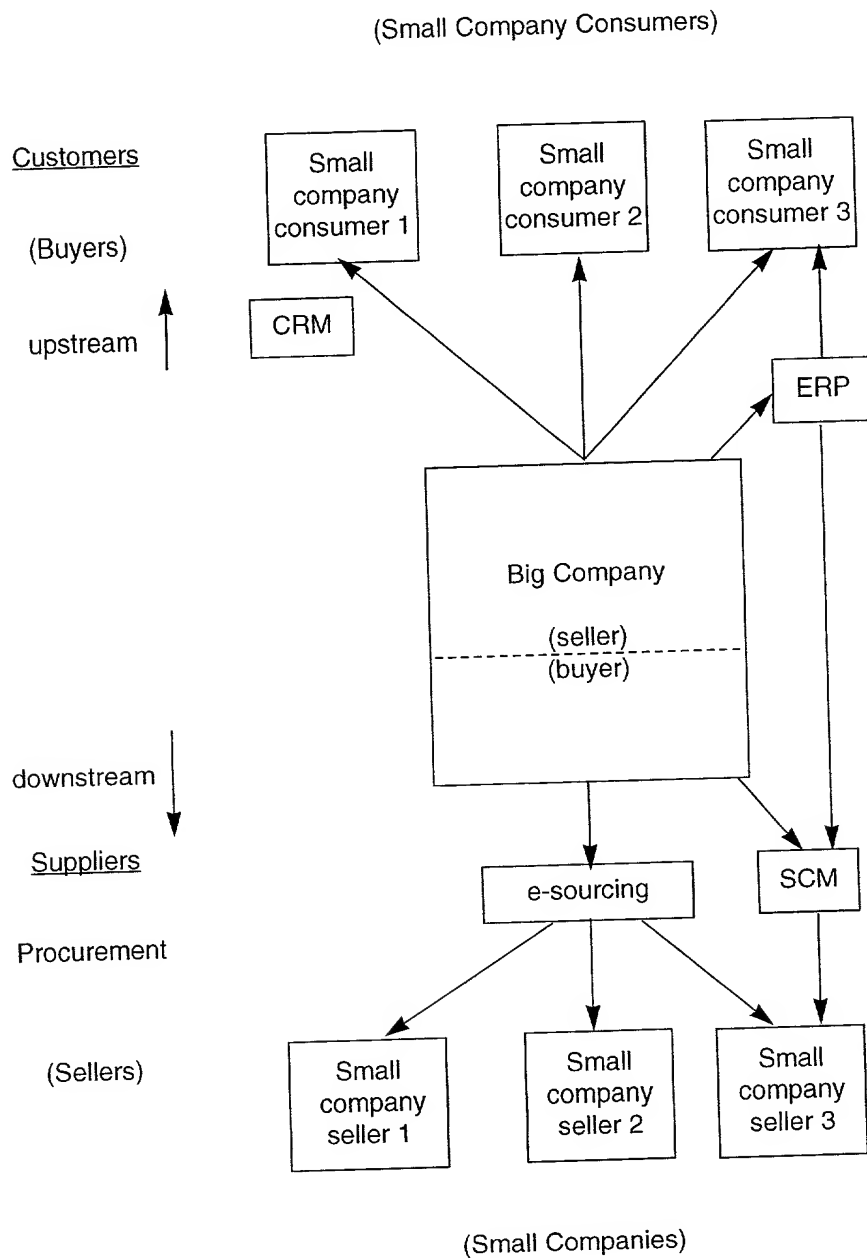


Fig. PA11: Traditional Search Technology

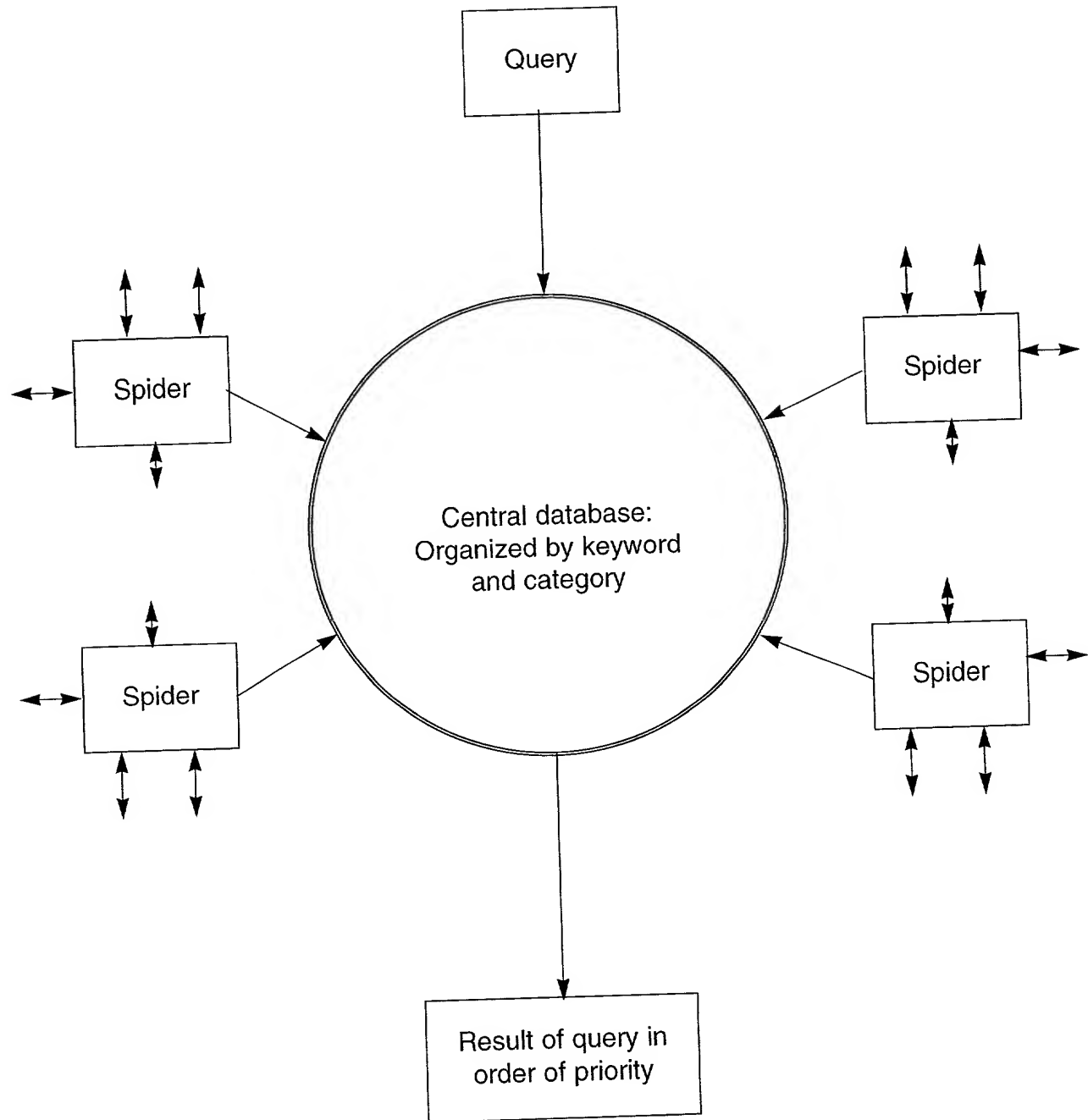


Fig. PA12: Distributed Search Approach

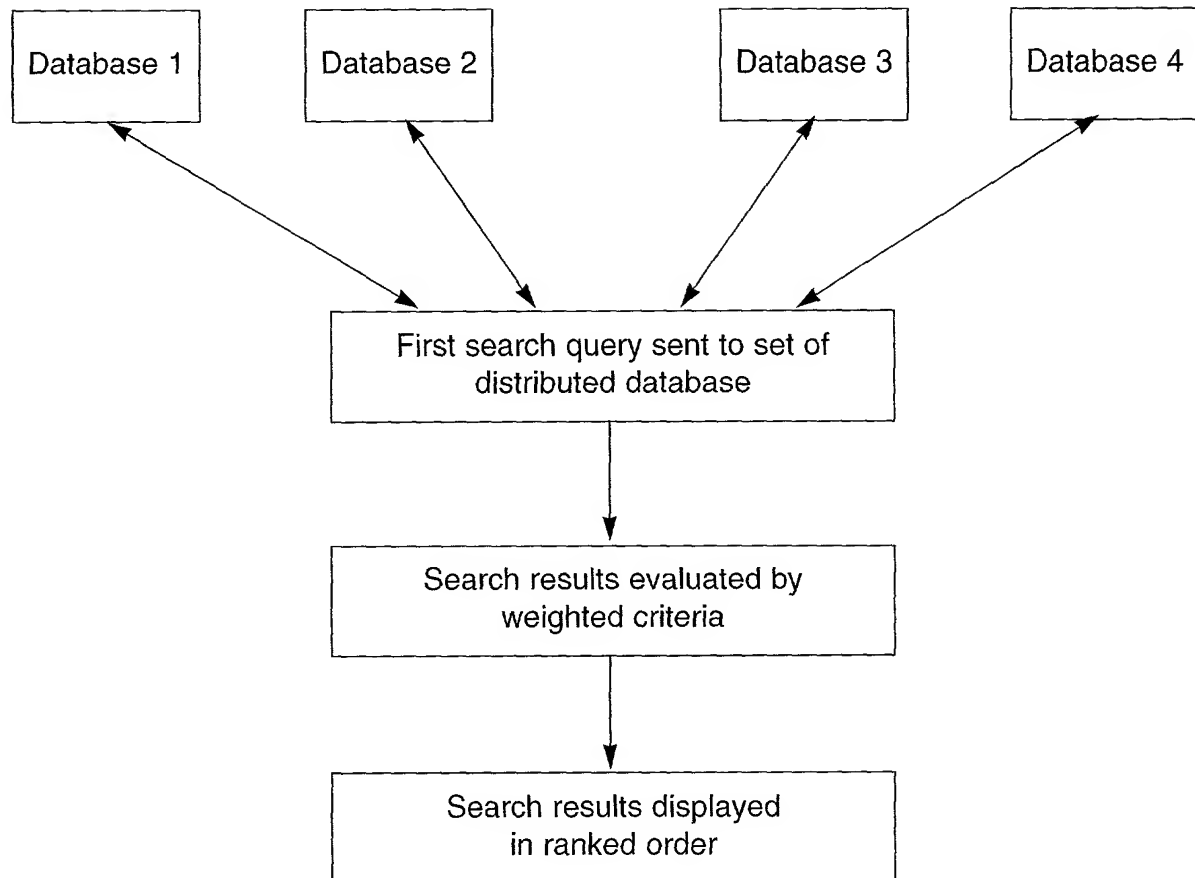
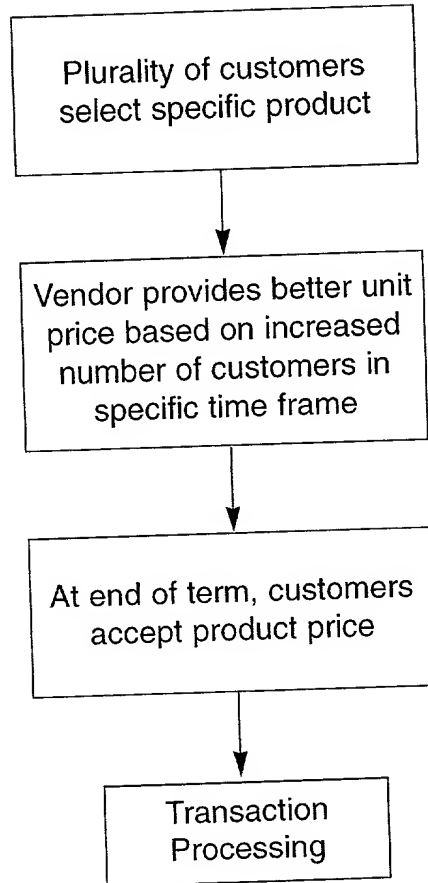


Fig. PA13: Traditional Aggregation



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Fig. PA14: Intermediated Option Contracts

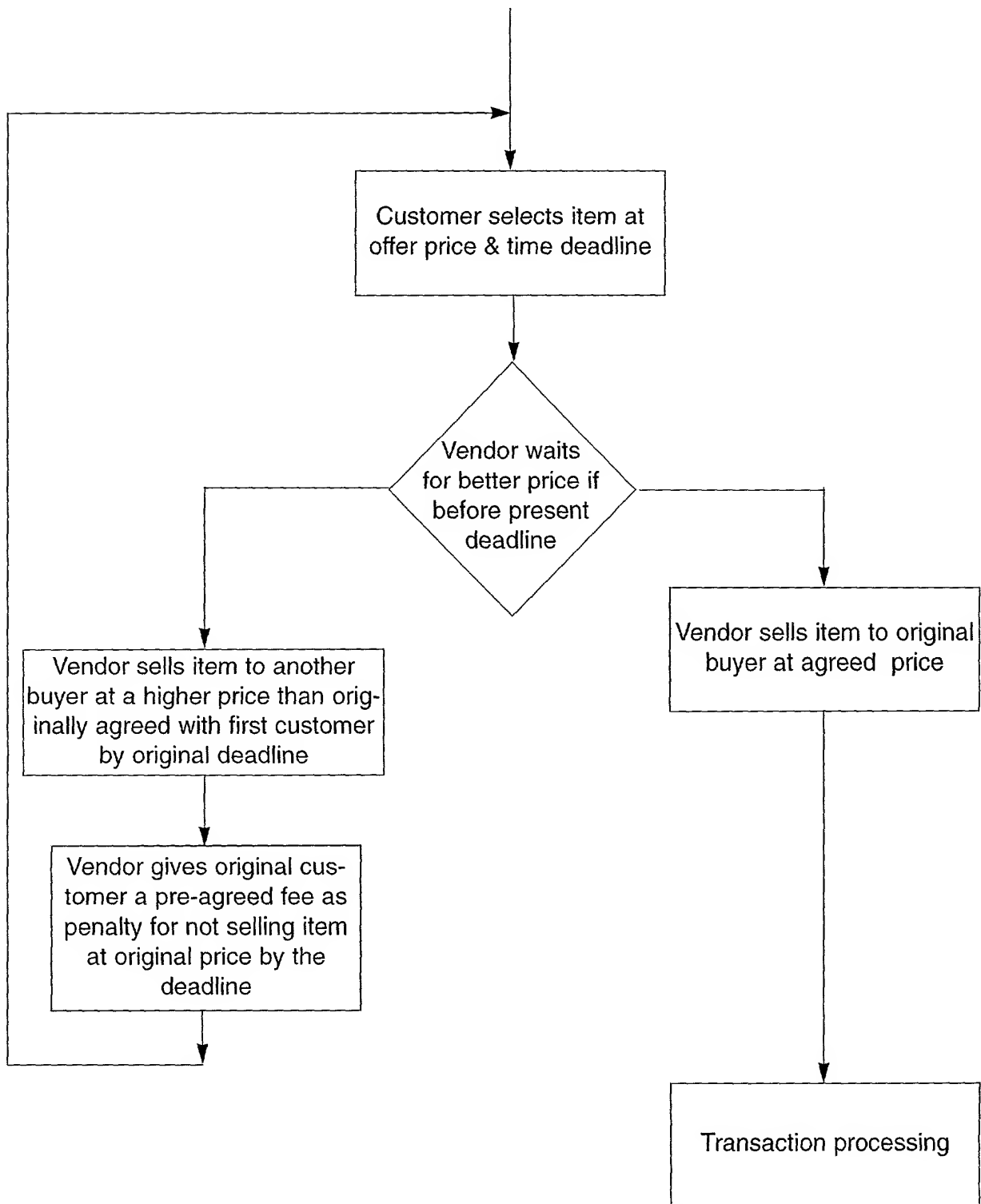


Fig. 1: CCN Architecture

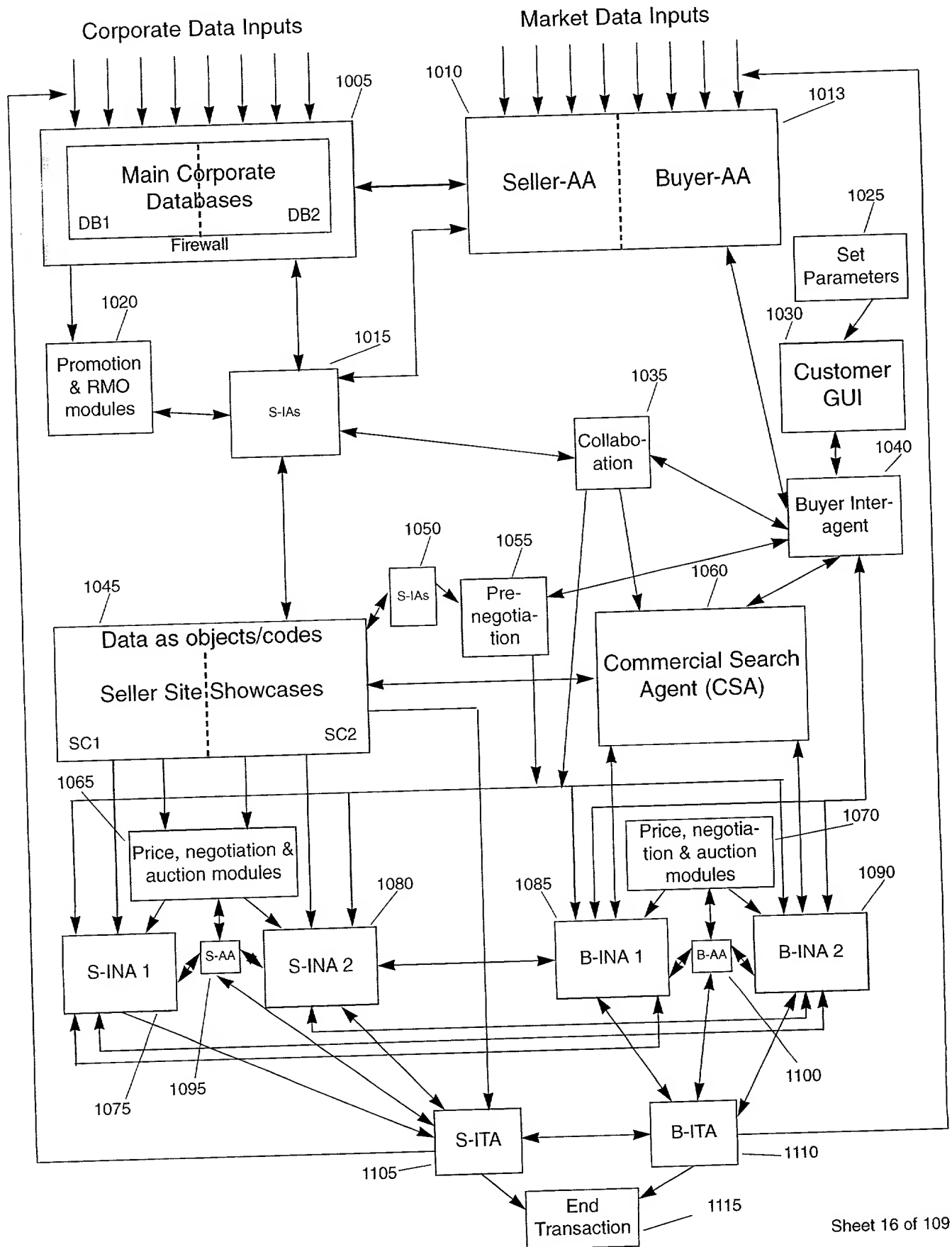


Fig. 2: CCN System Layers

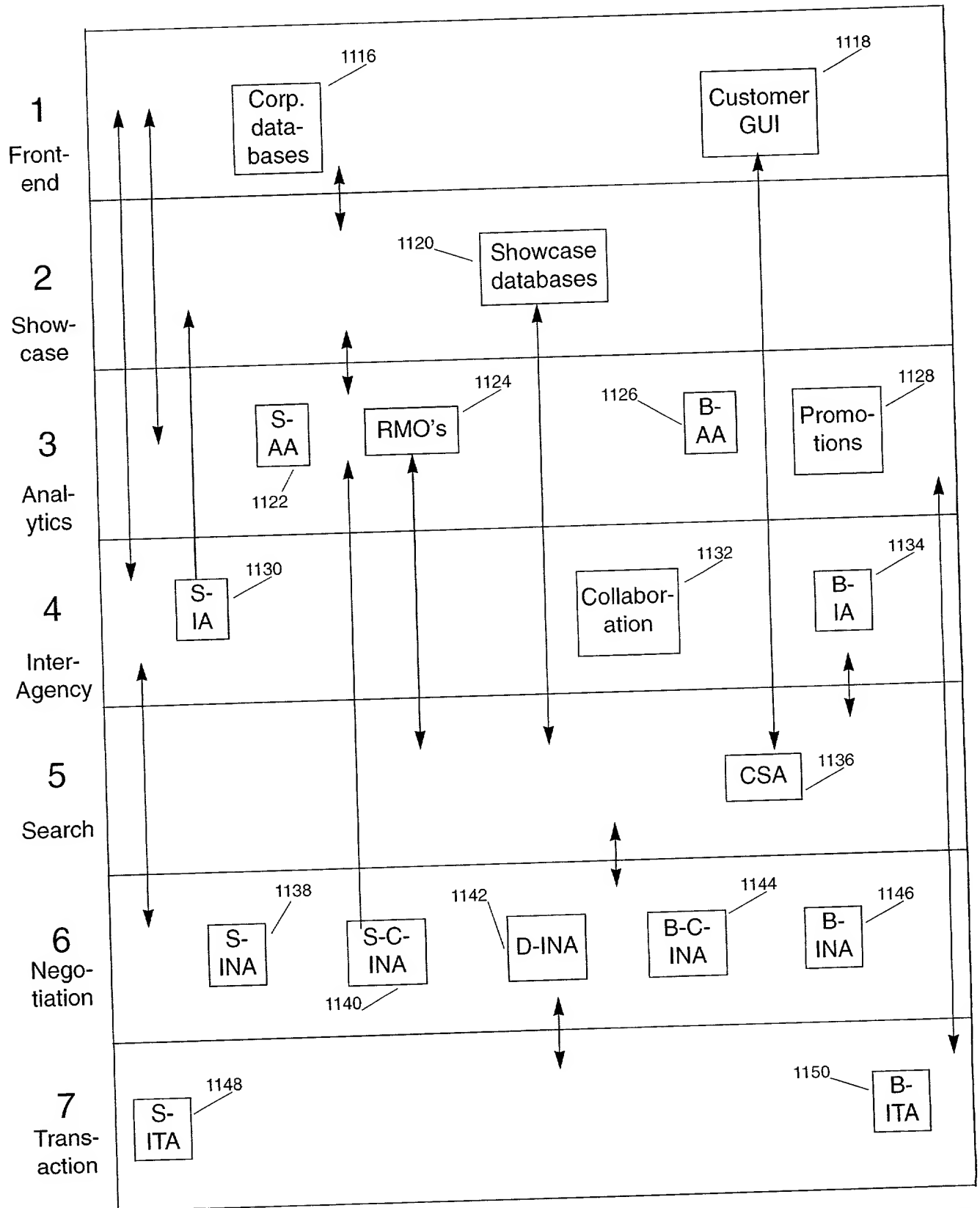


Fig. 3: Showcase Database System

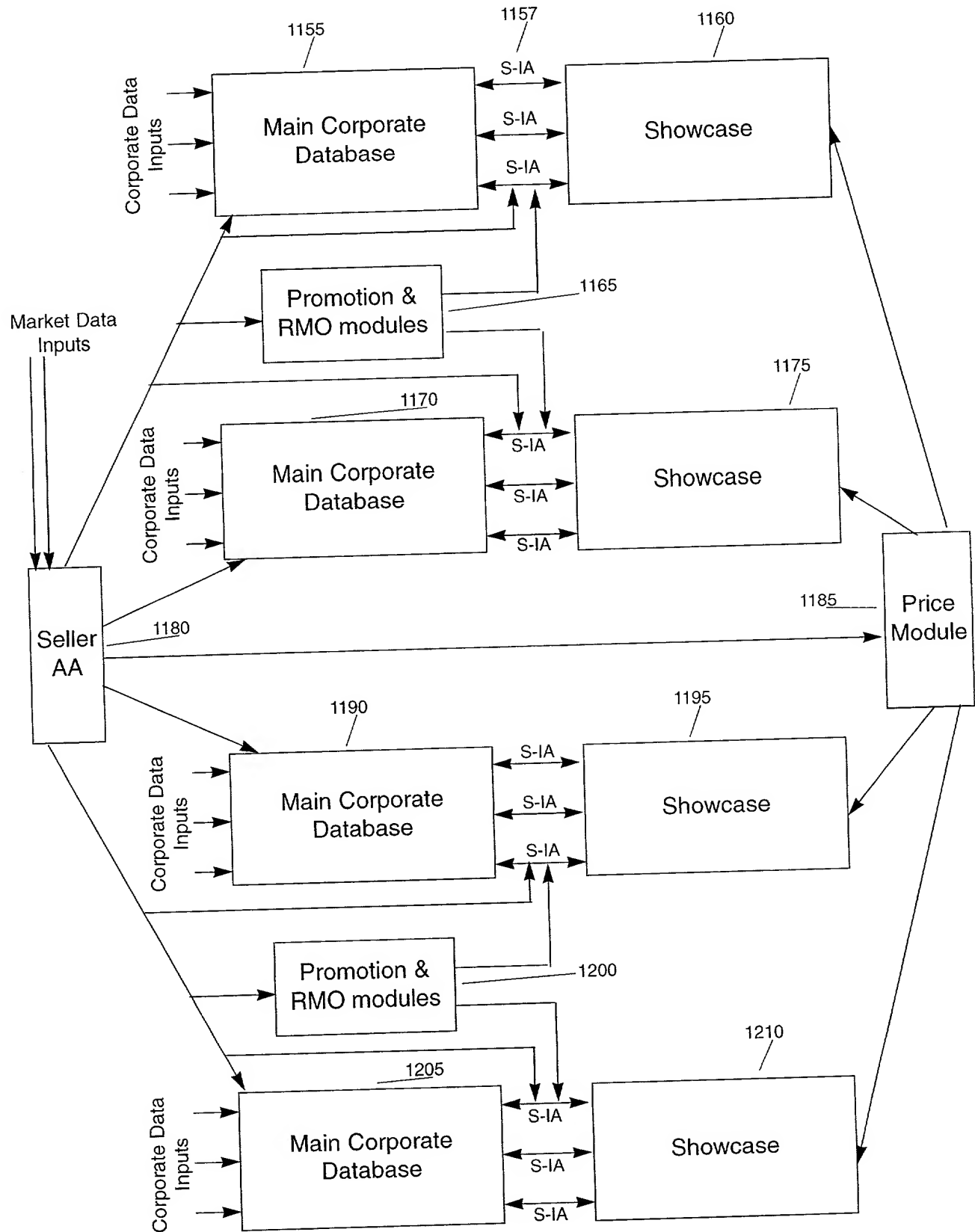
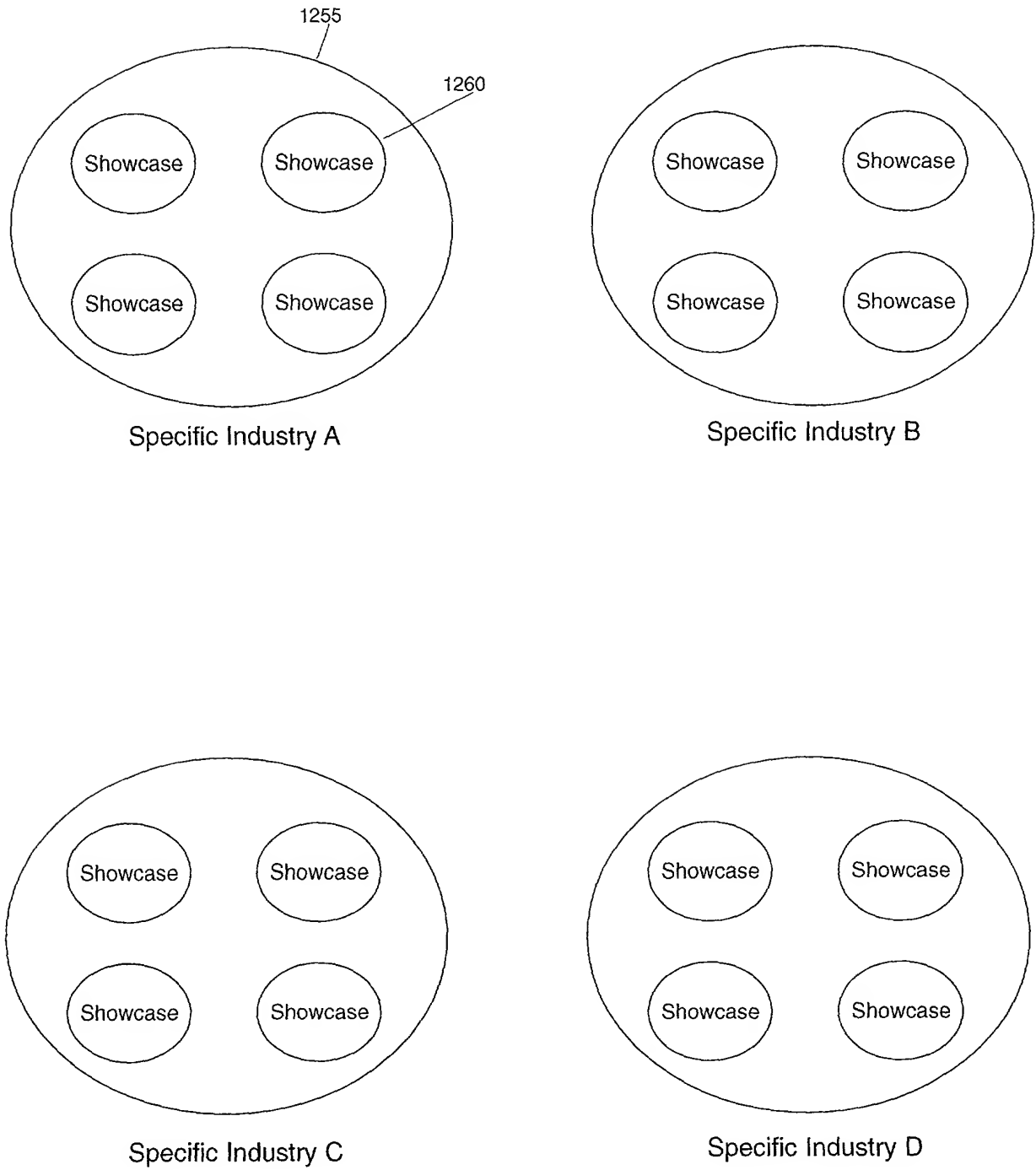


Fig. 4: Multiple Vertical Databases



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Fig. 6: Showcase Database Operation

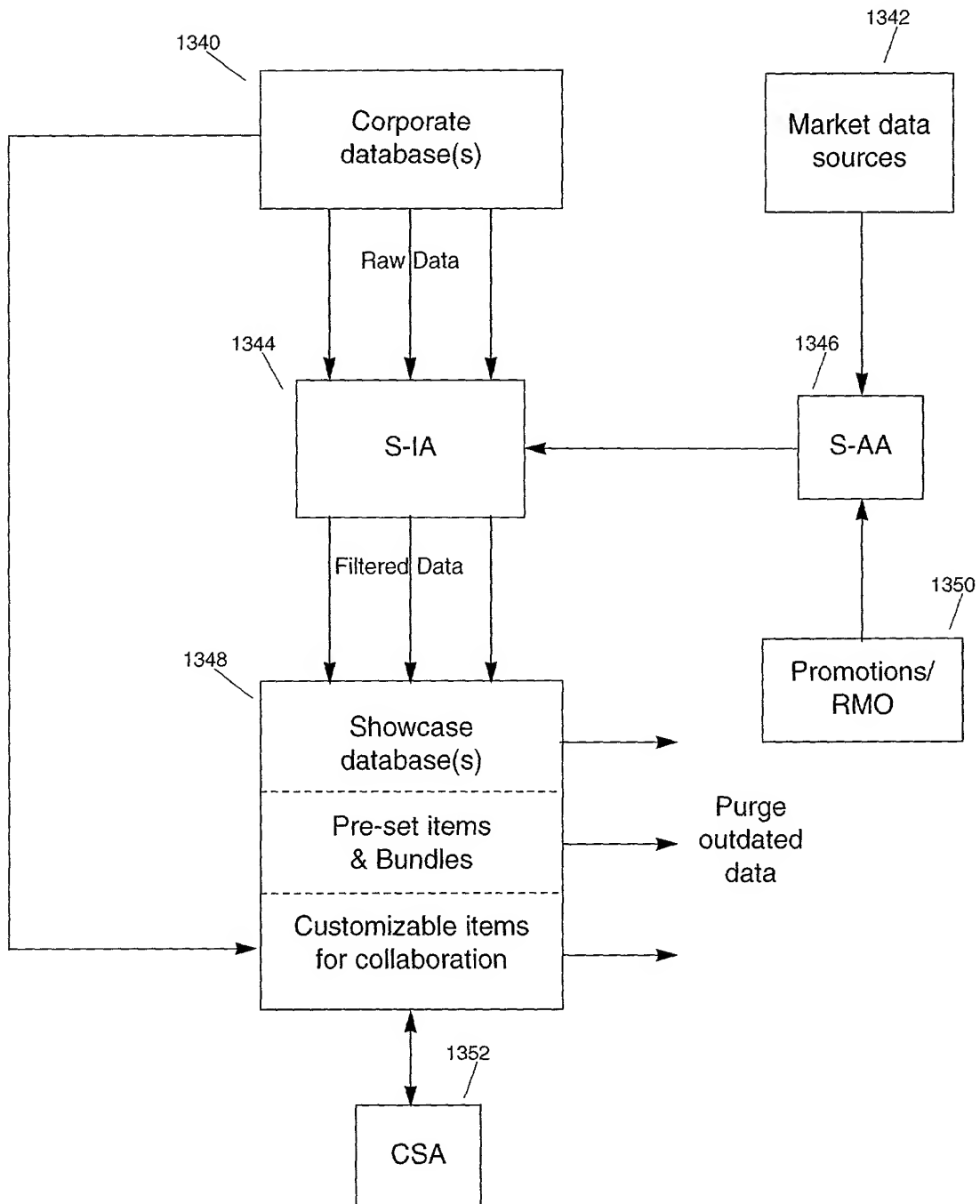


Fig. 7: Showcase Data Flow

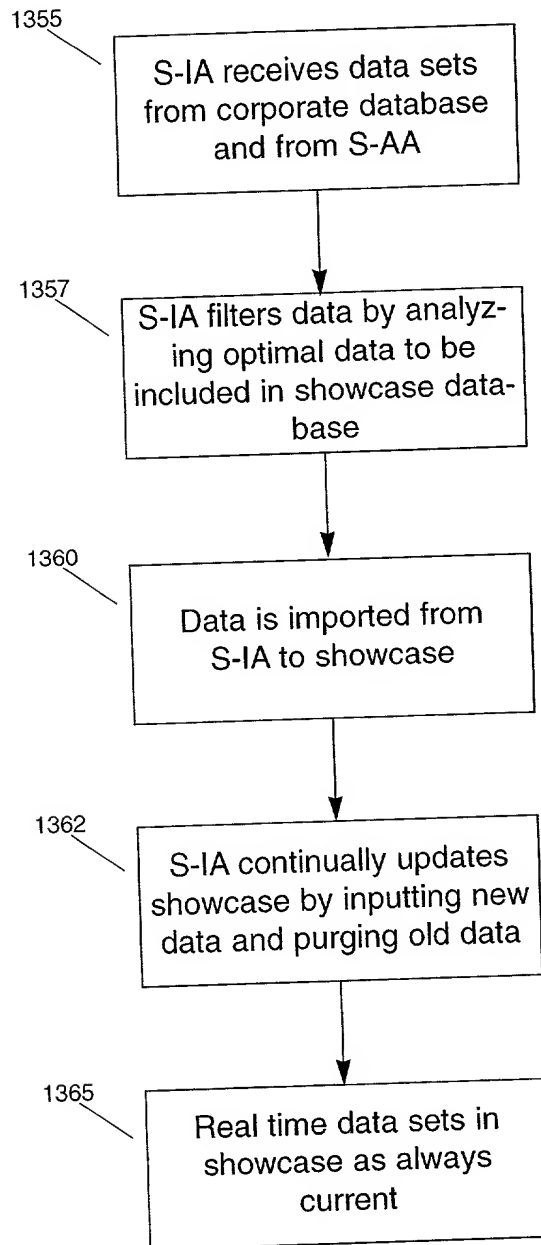


Fig. 8: Inter-agent System Architecture

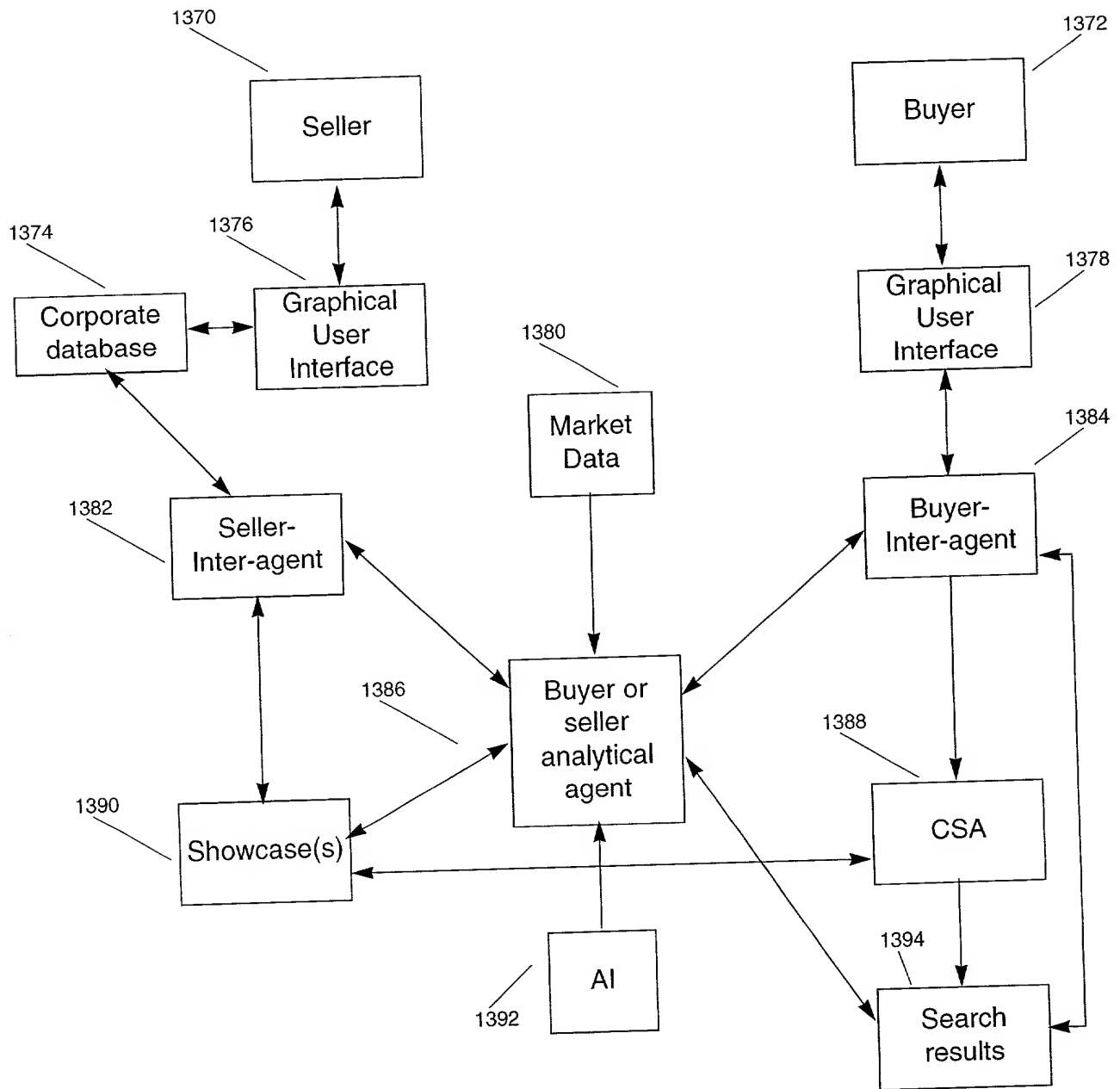


Fig. 9: Rivers of Data Flows

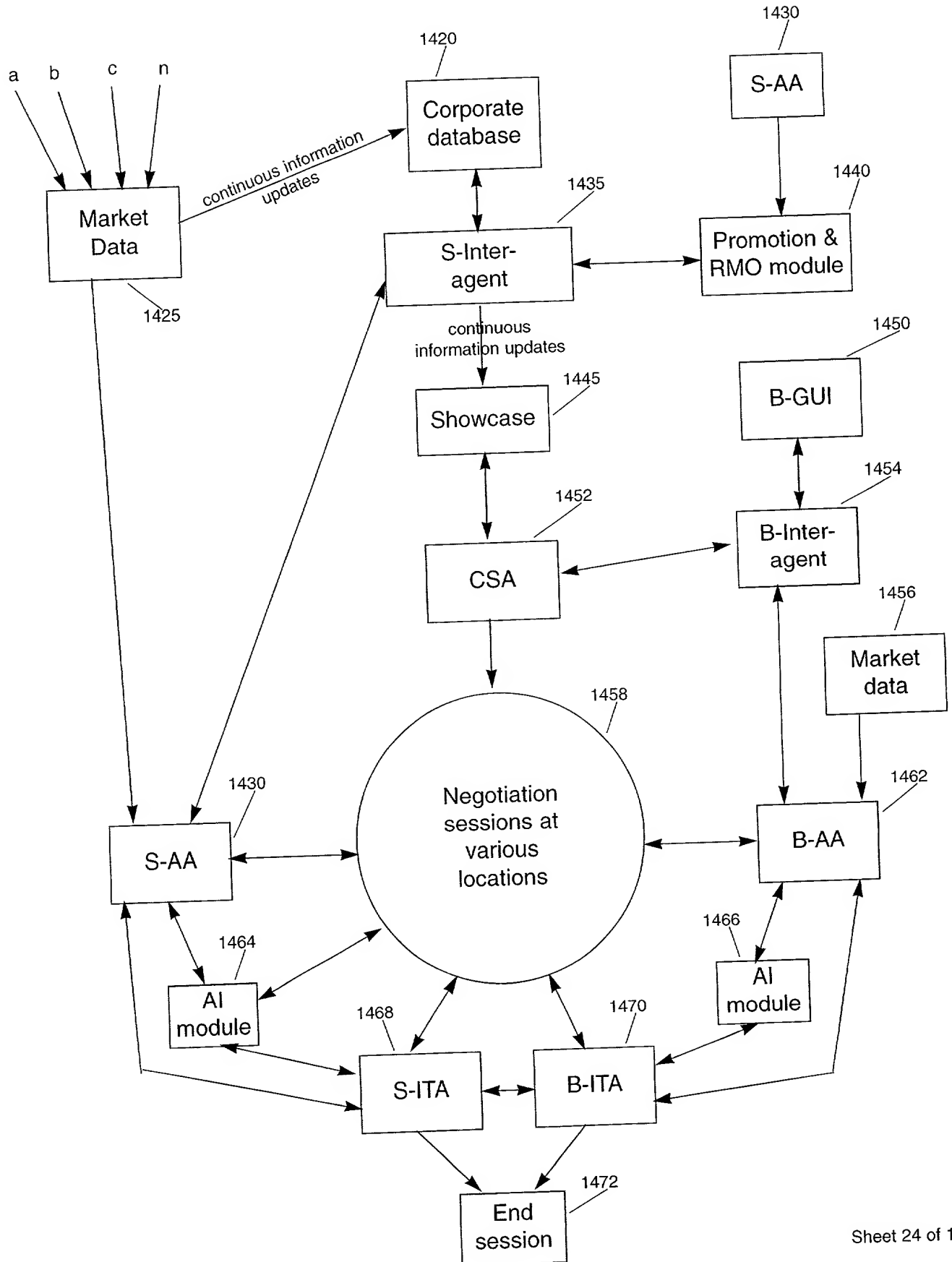


Fig. 10: CSA System Architecture

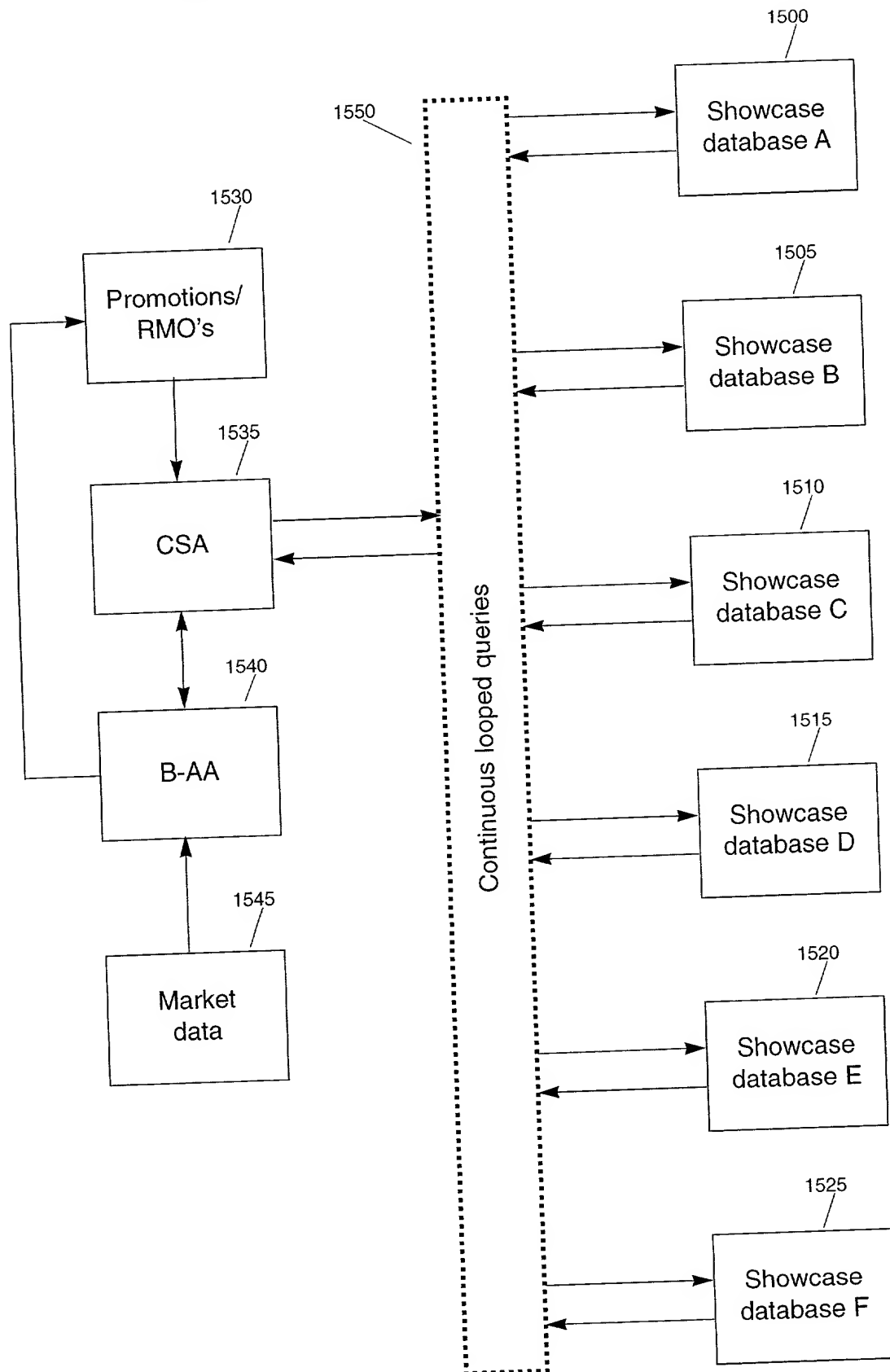


Fig. 11: CSA First Query Sequence

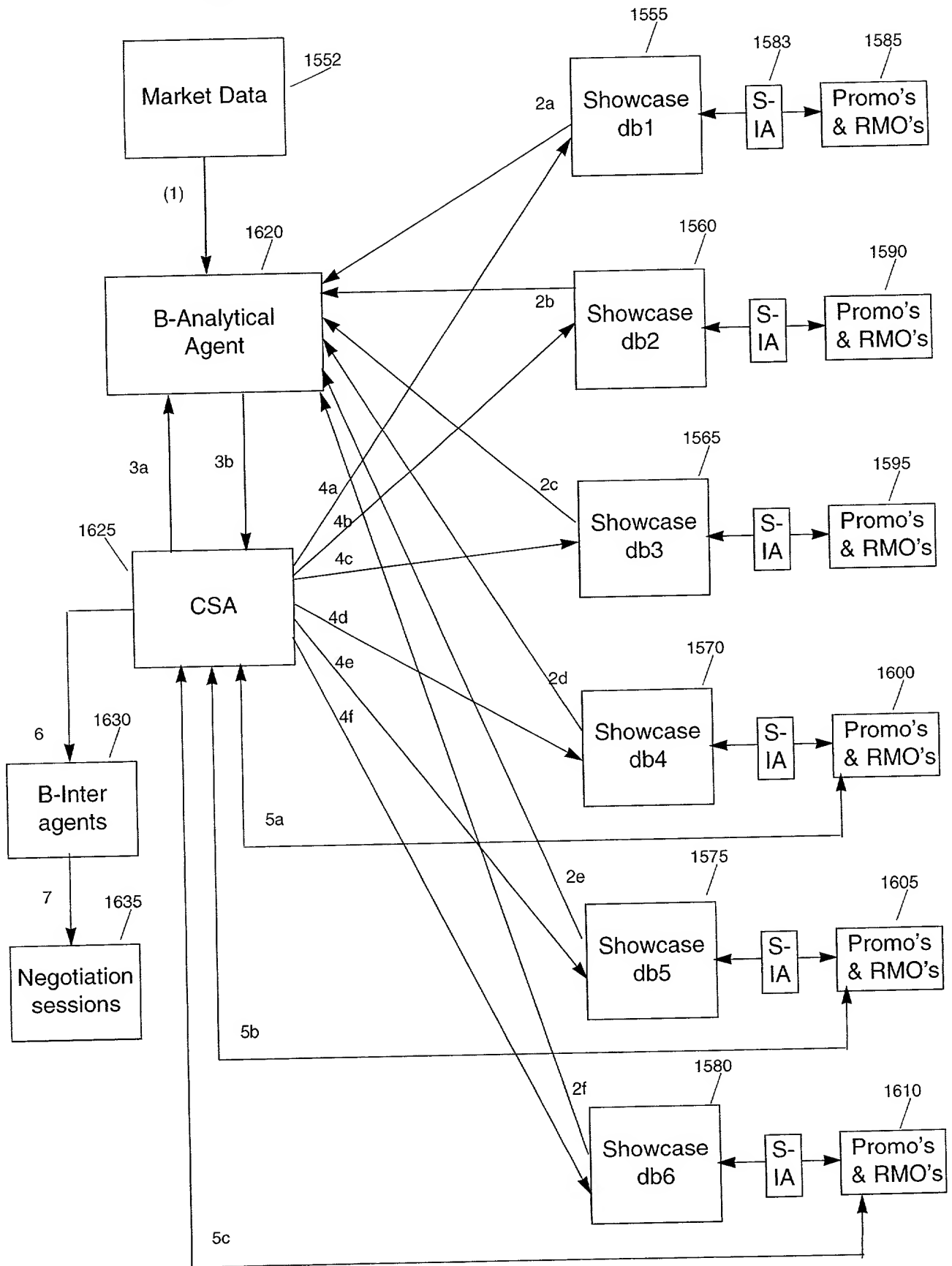


Fig. 12: Programmability of CSAs for Priorities of Search

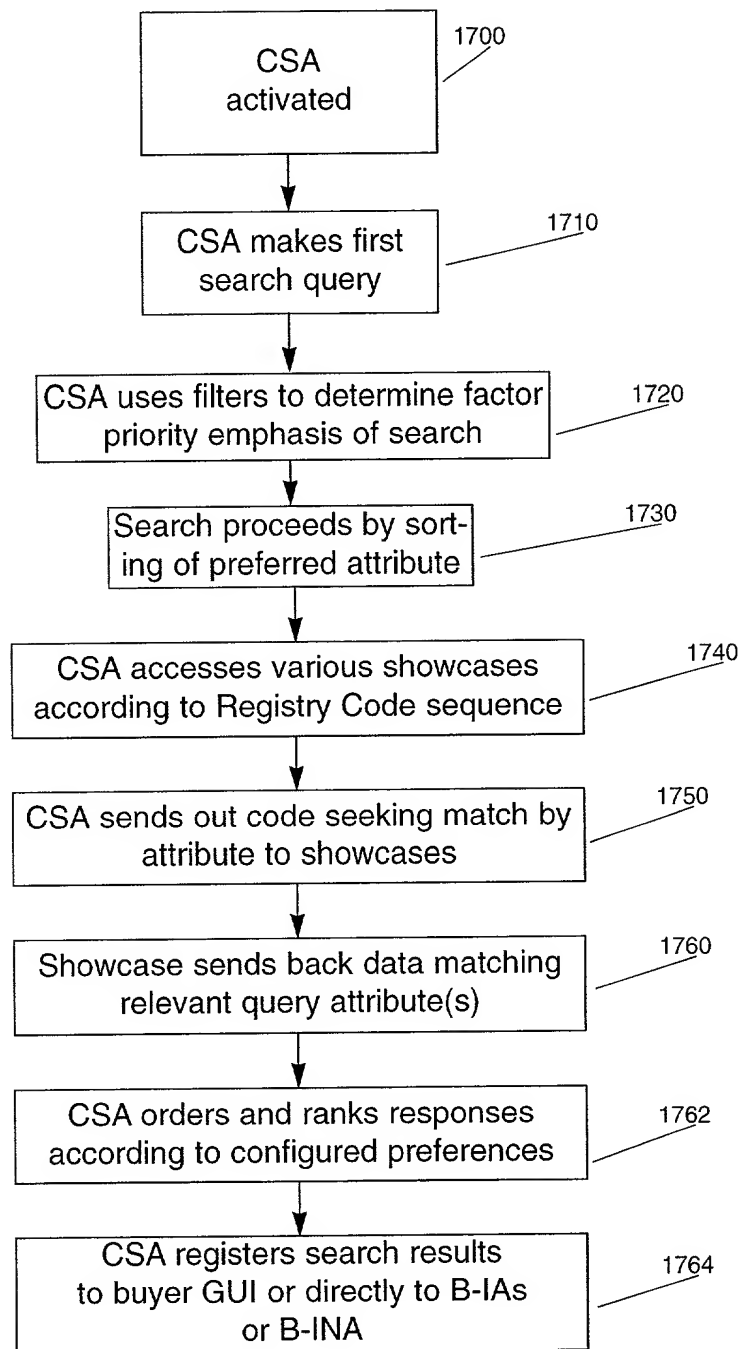


Fig. 13: CSA As Initial Search Query

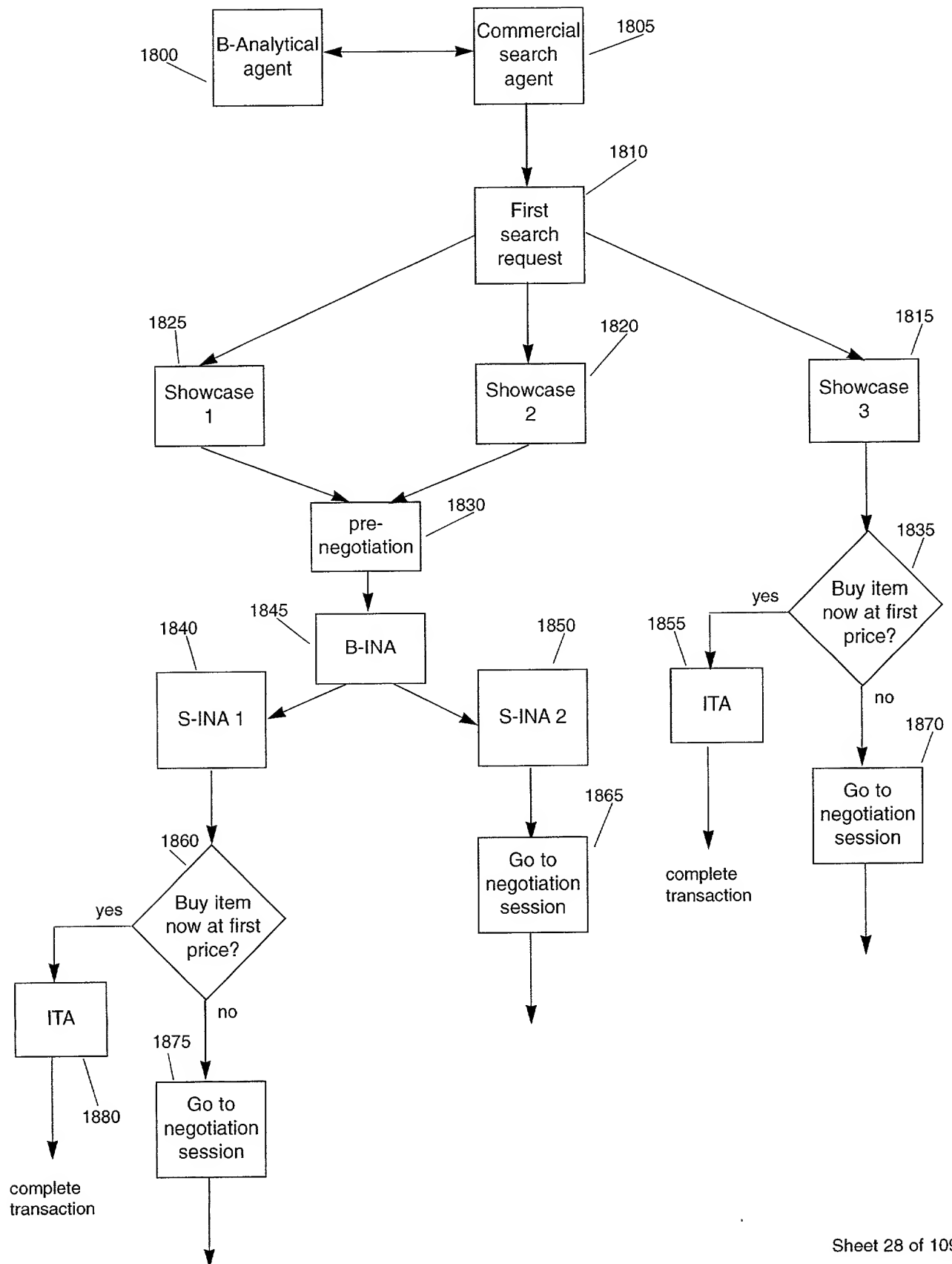
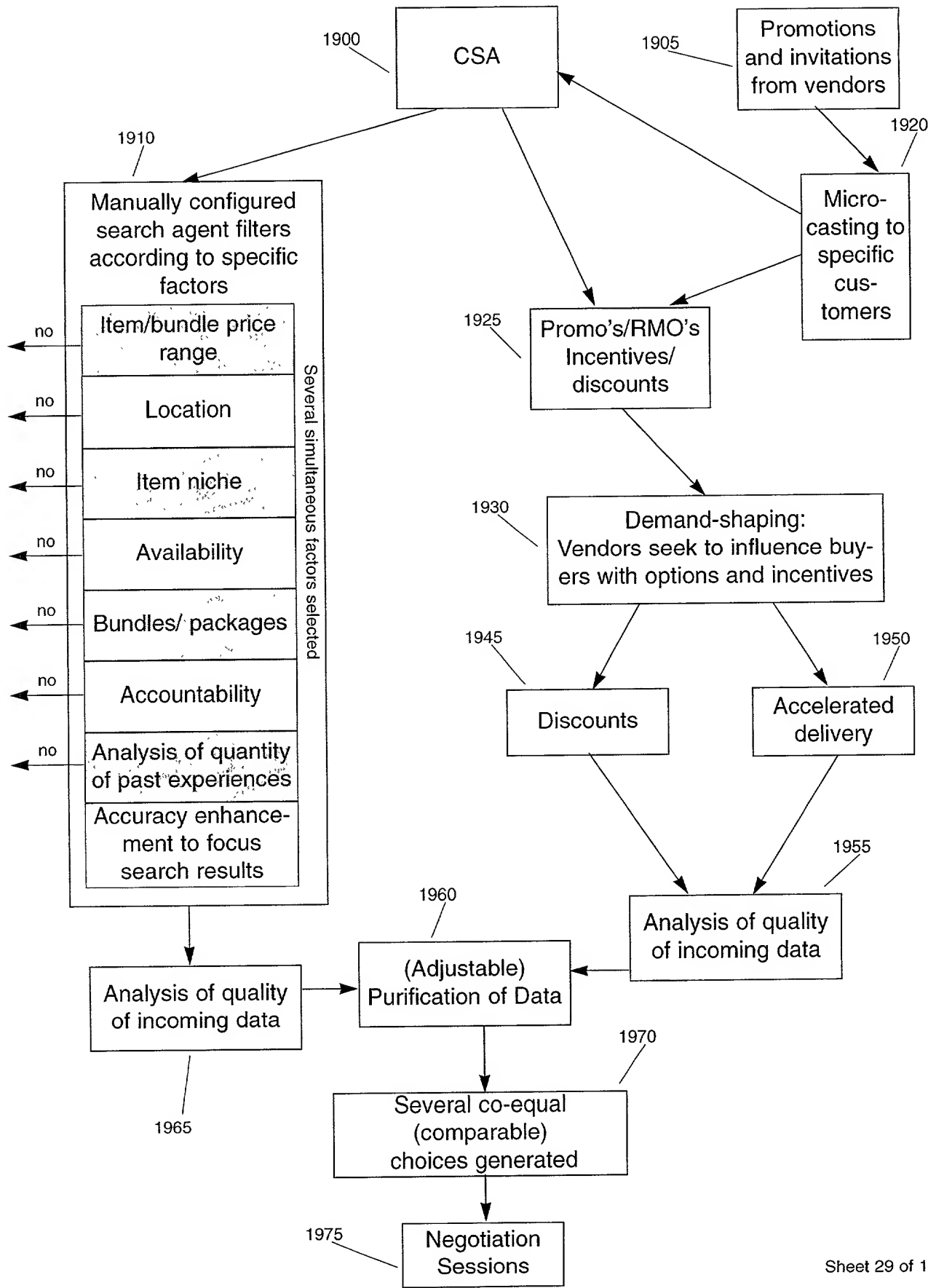


Fig. 14: CSA Filters



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Fig. 15: Promotions

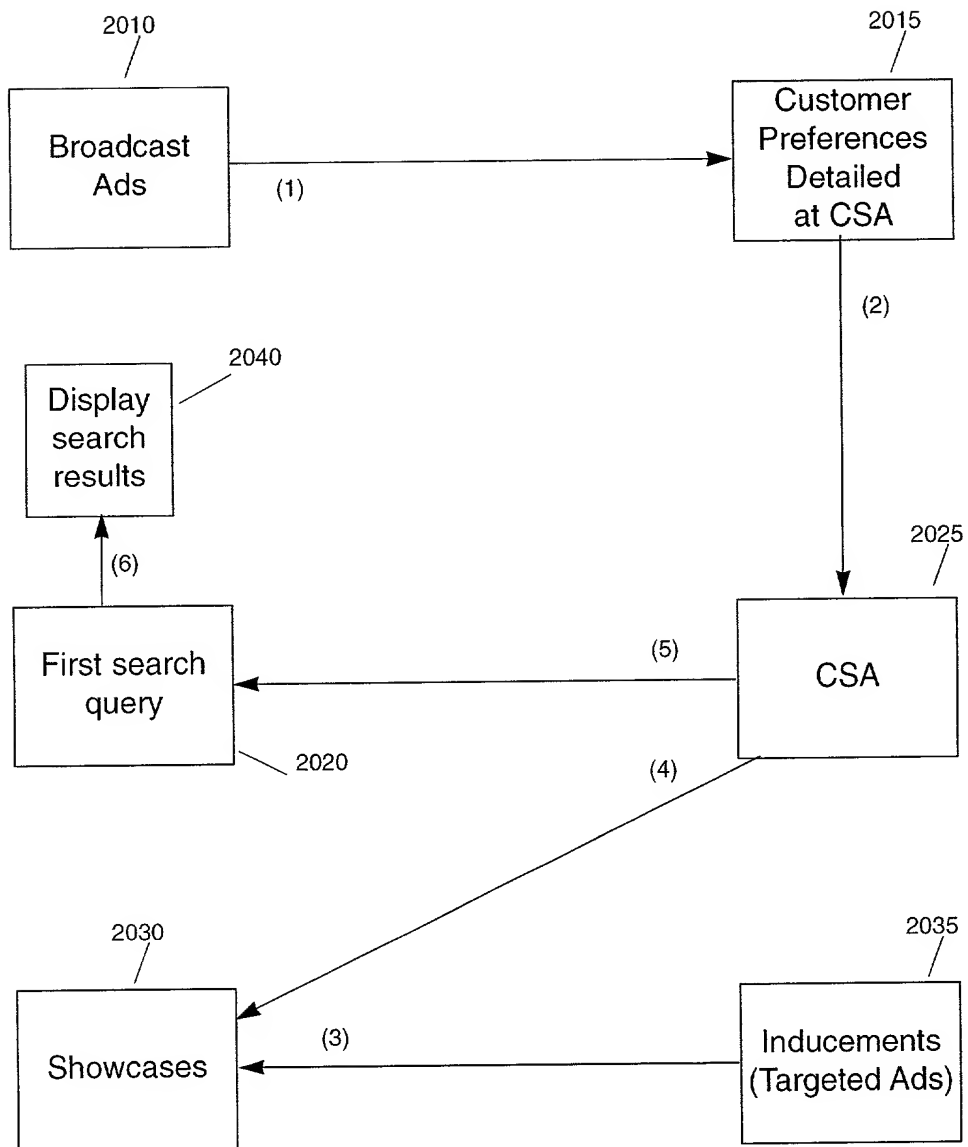


FIG. 15: PROMOTIONS

Fig. 16: Proximity Marketing For Mobile INAs

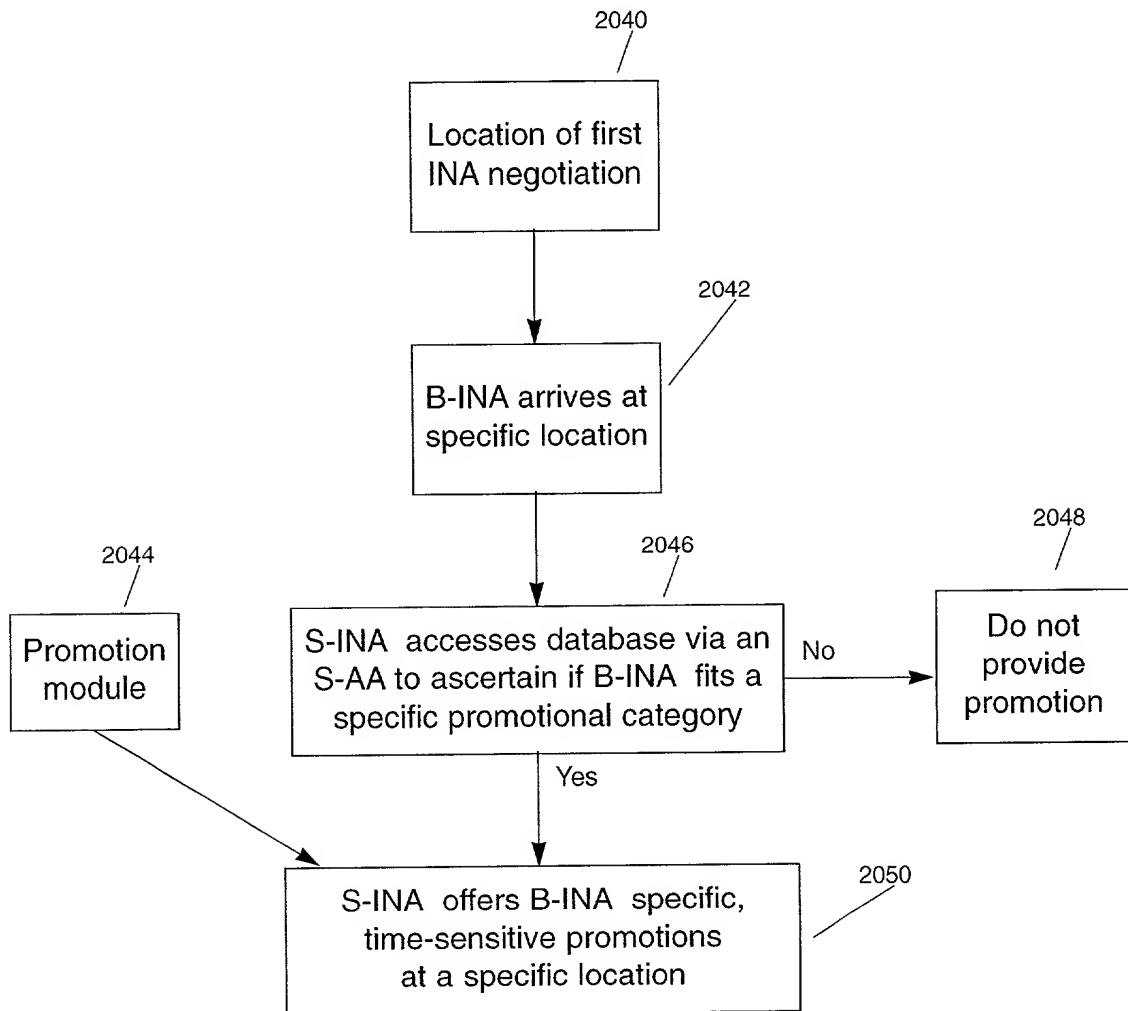


Fig. 17: Promotional Discounting

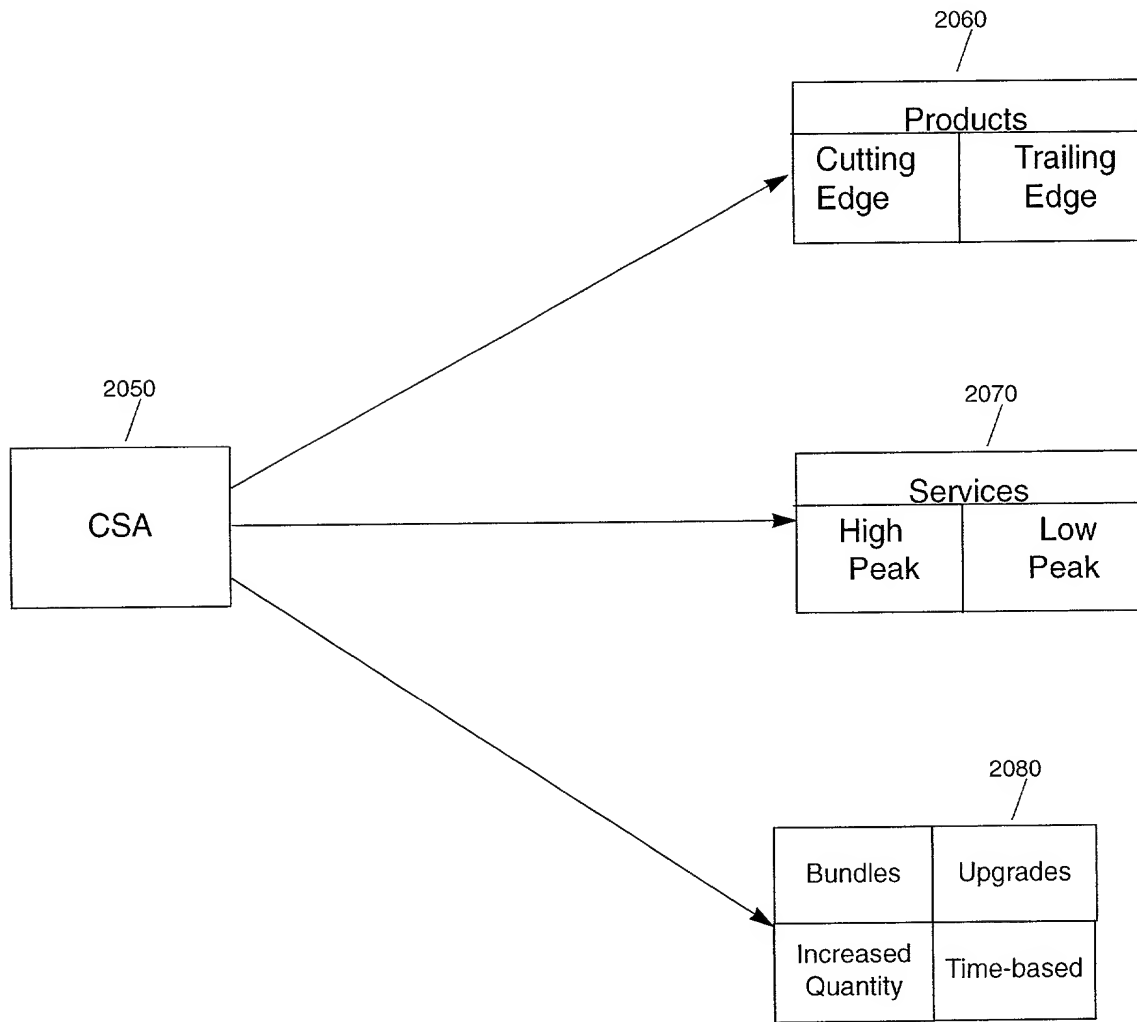


Fig. 18: Dynamic Pricing Model

Conditions:

- Product cycle rate
- Market/Economy
- Competition

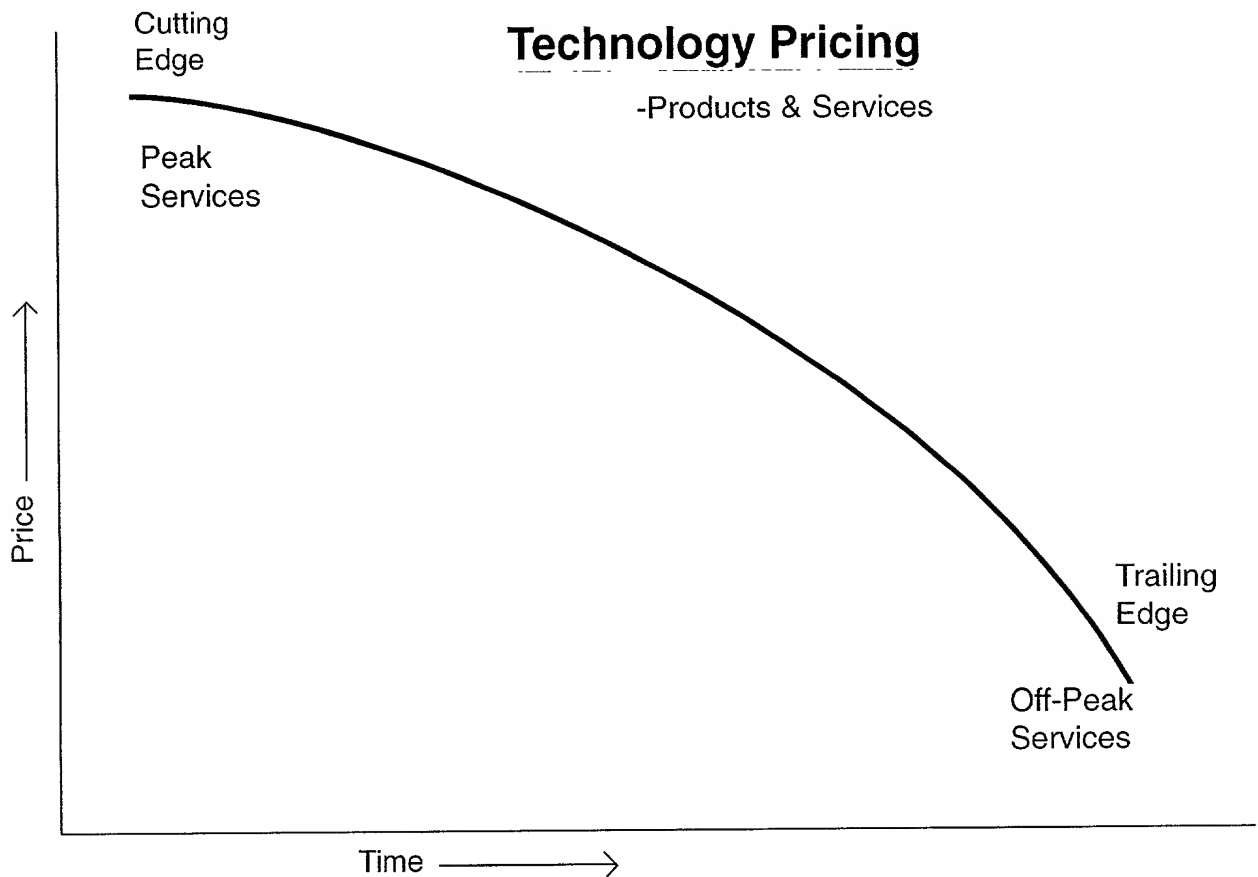


Fig. 19: Pricing Discount Promotions

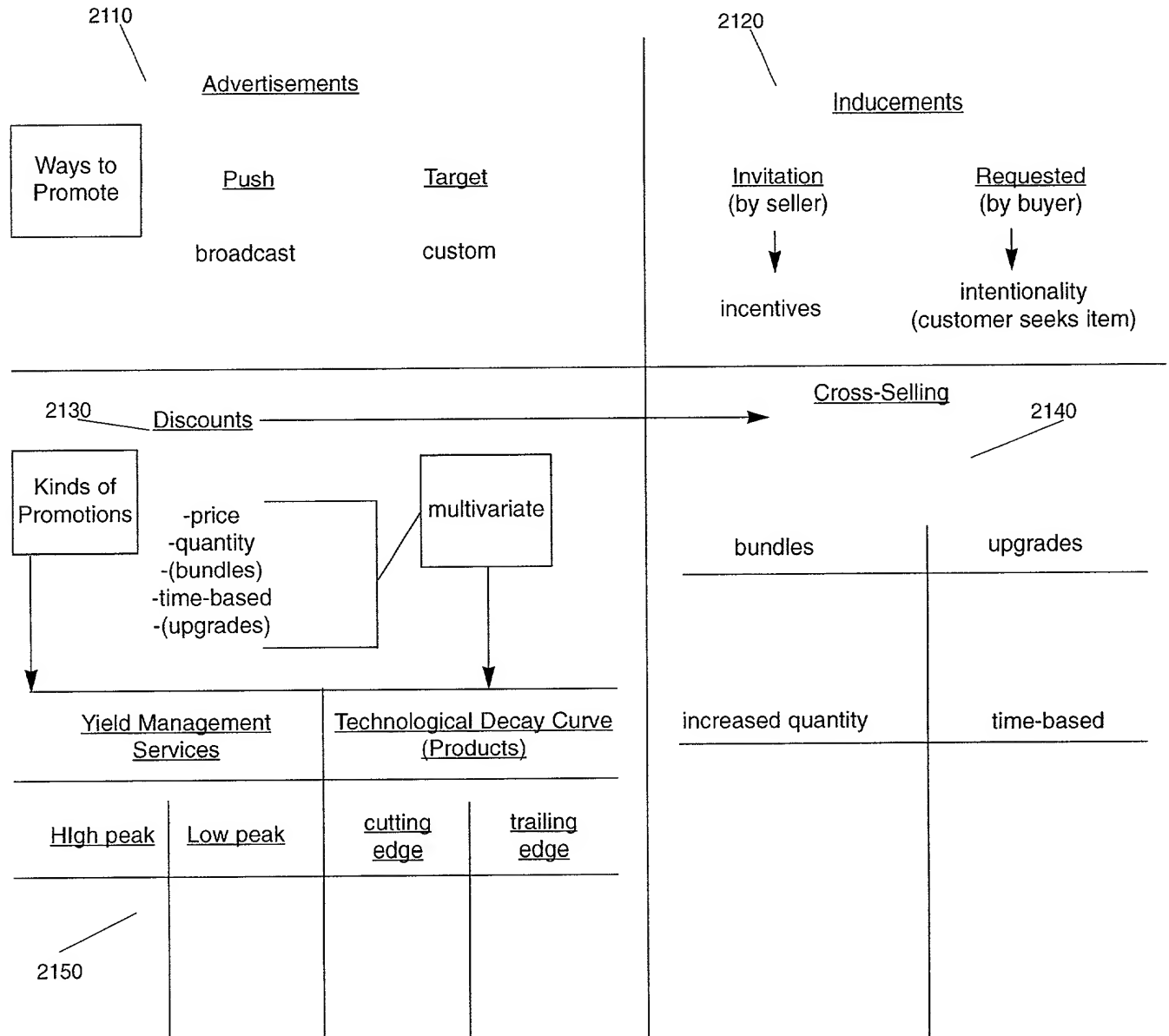
Dropping Prices Tendency

1. Trailing edge technology
2. Off-peak service
3. Bundled packages (aggregation-discounts)
4. Surplus items
5. Decreasing quality
6. Quantity discount (multiple identical items)
8. Un-time-sensitive
9. Decreased features
10. Exploding (Time-sensitive) offers

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Fig. 20: Promotions Integrated with CSA & Showcase

Transaction based vs. Relationship based



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Fig. 21: RMO Contract Processes in Distributed System

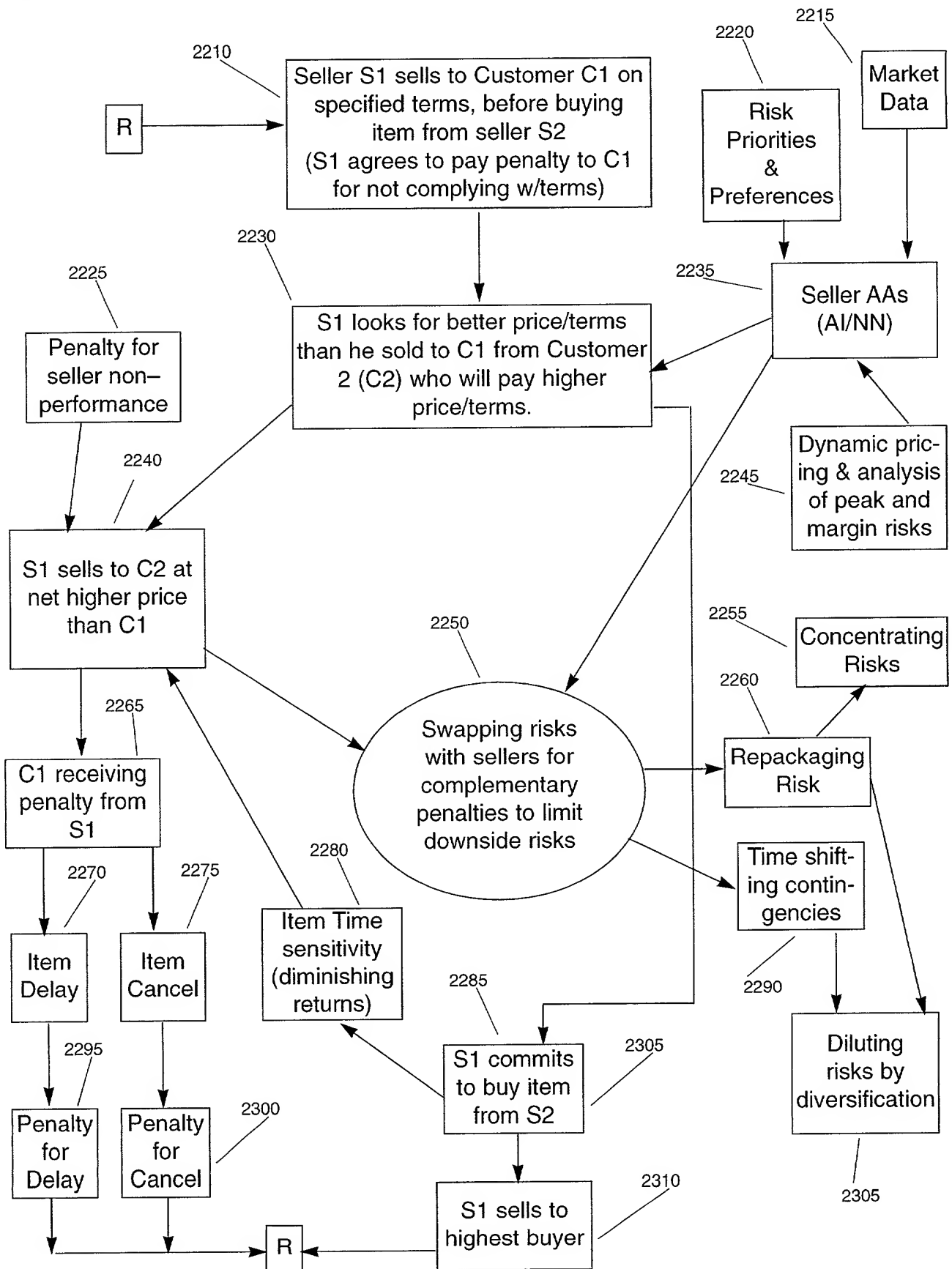


Fig. 22: Transaction Contingencies

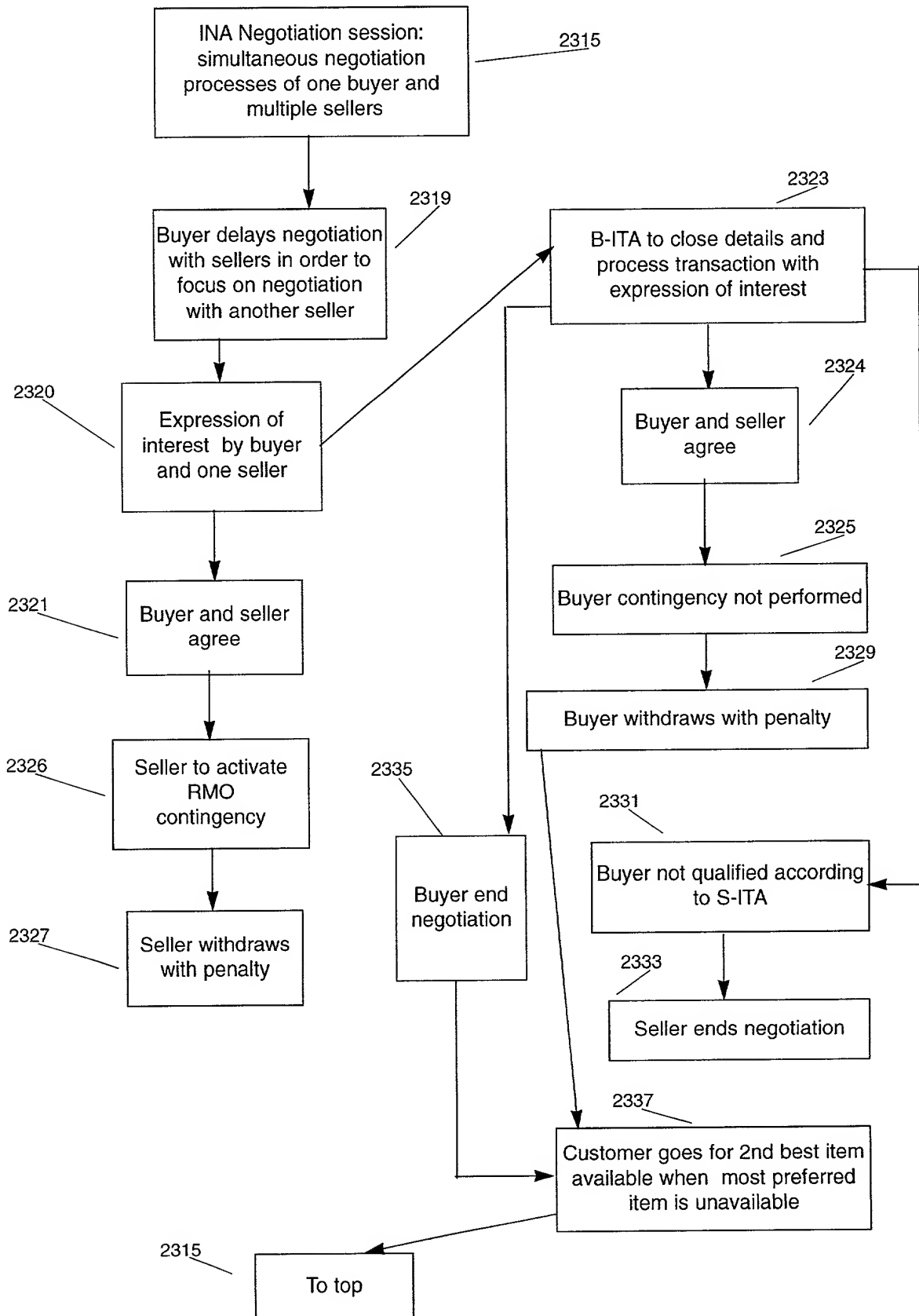


Fig. 23: Information Collaboration for MTO

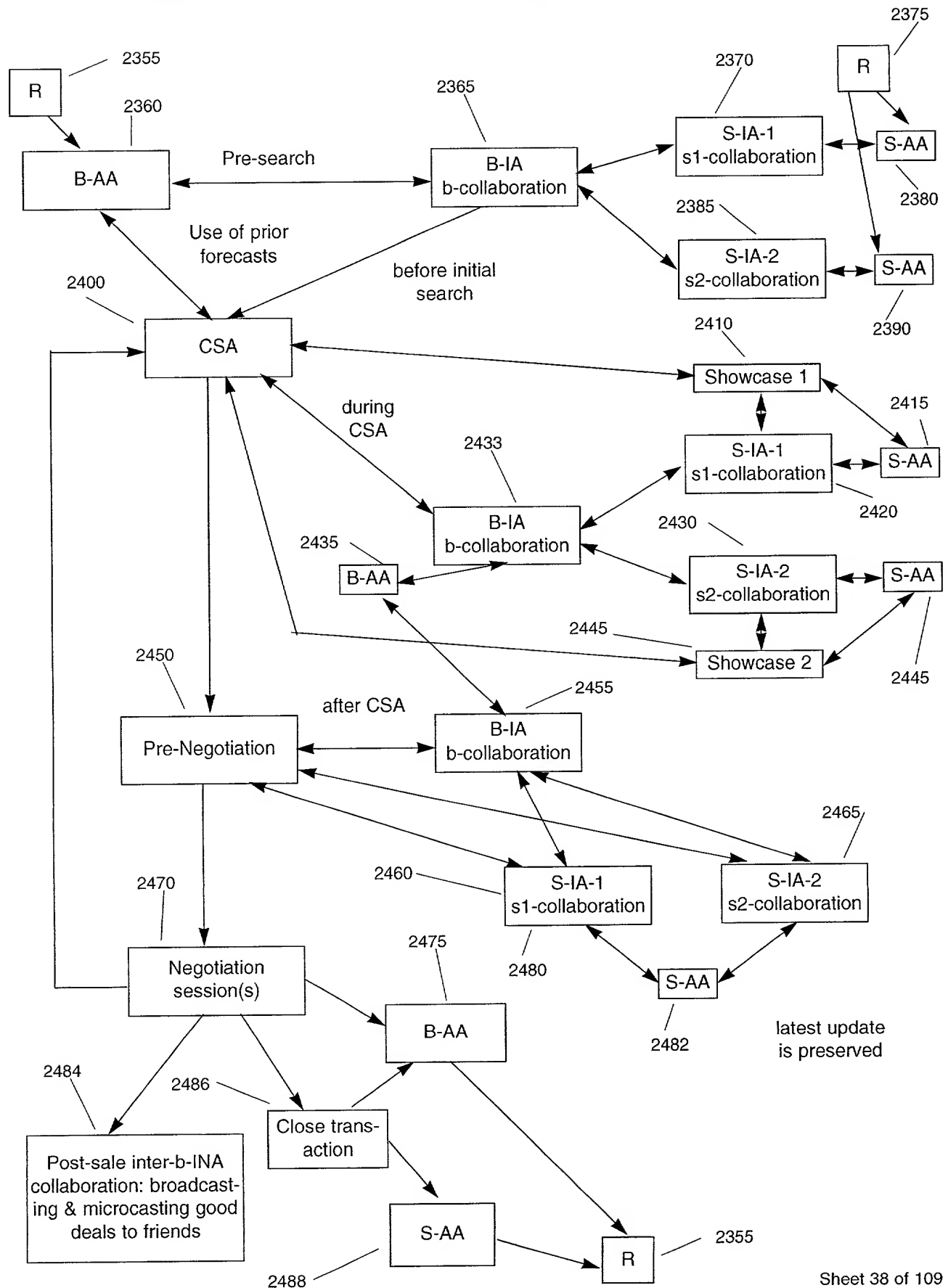


FIG. 23

Fig. 24: Collaboration Process For MTO Customization

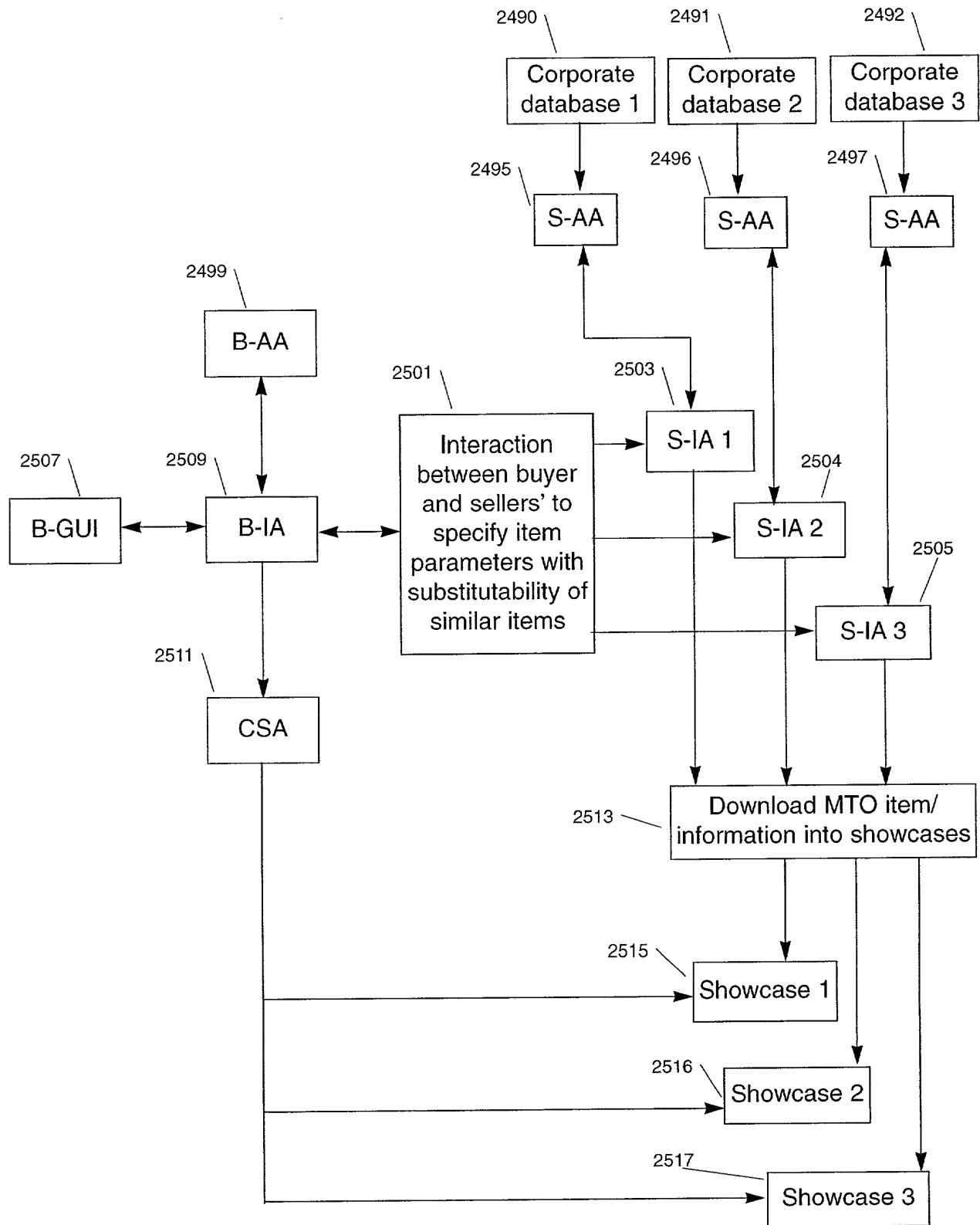


Fig. 25: INA Interaction (B-INA & S-INA Interactions)

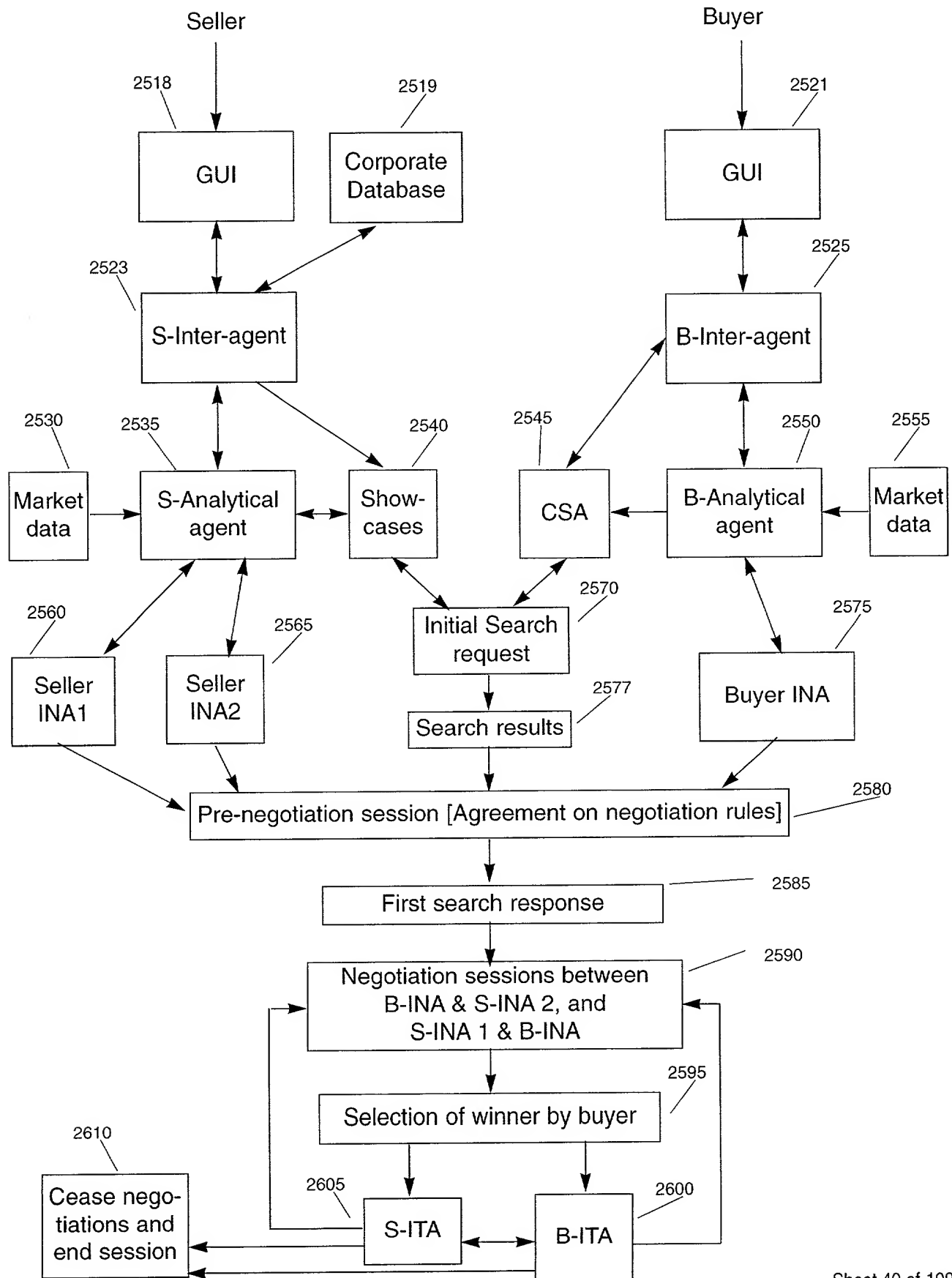


Fig. 26: INA Interactions - Ricochet Model

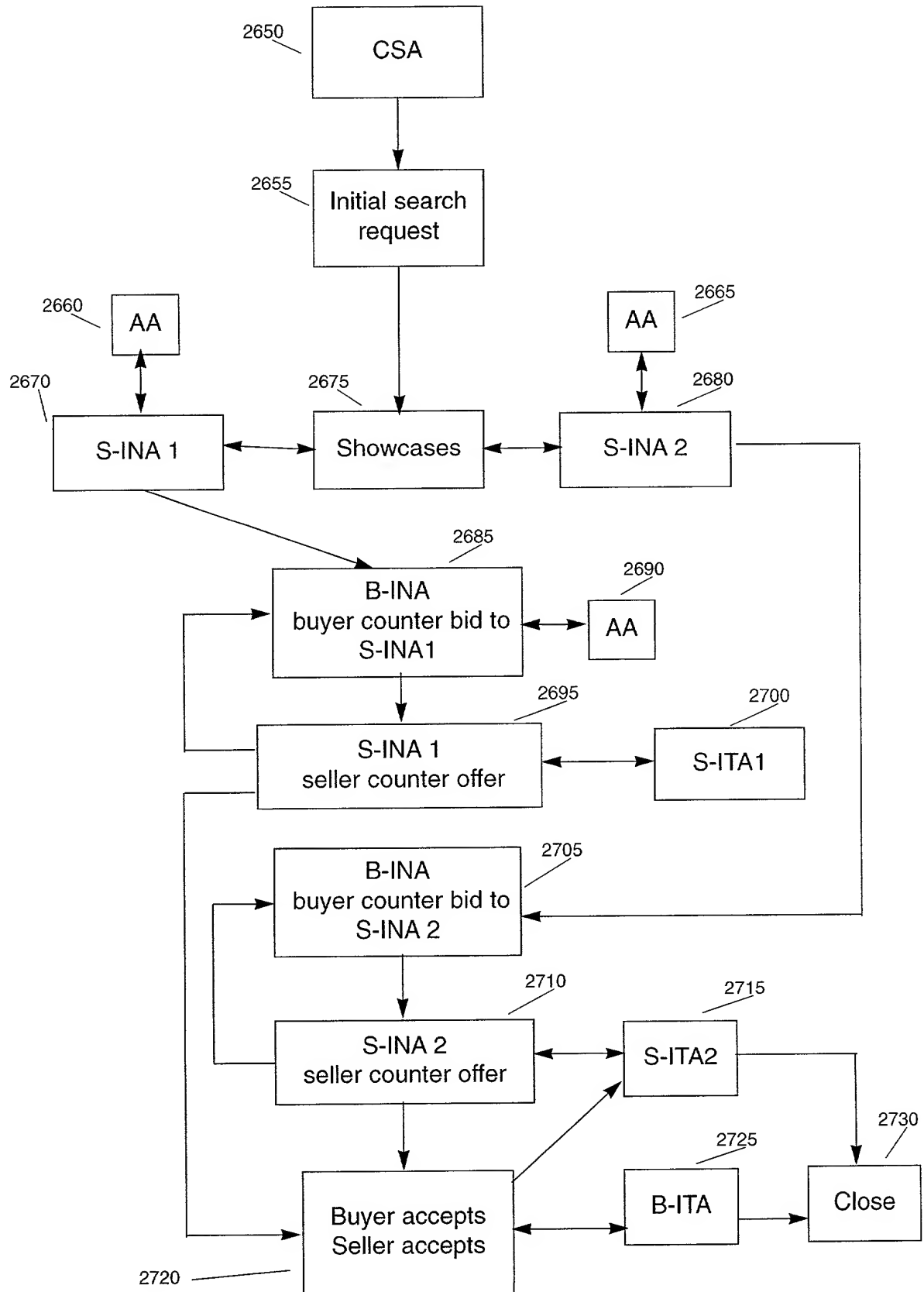


FIG. 26: INA Interactions - Ricochet Model

Fig. 27: Pre-Negotiation

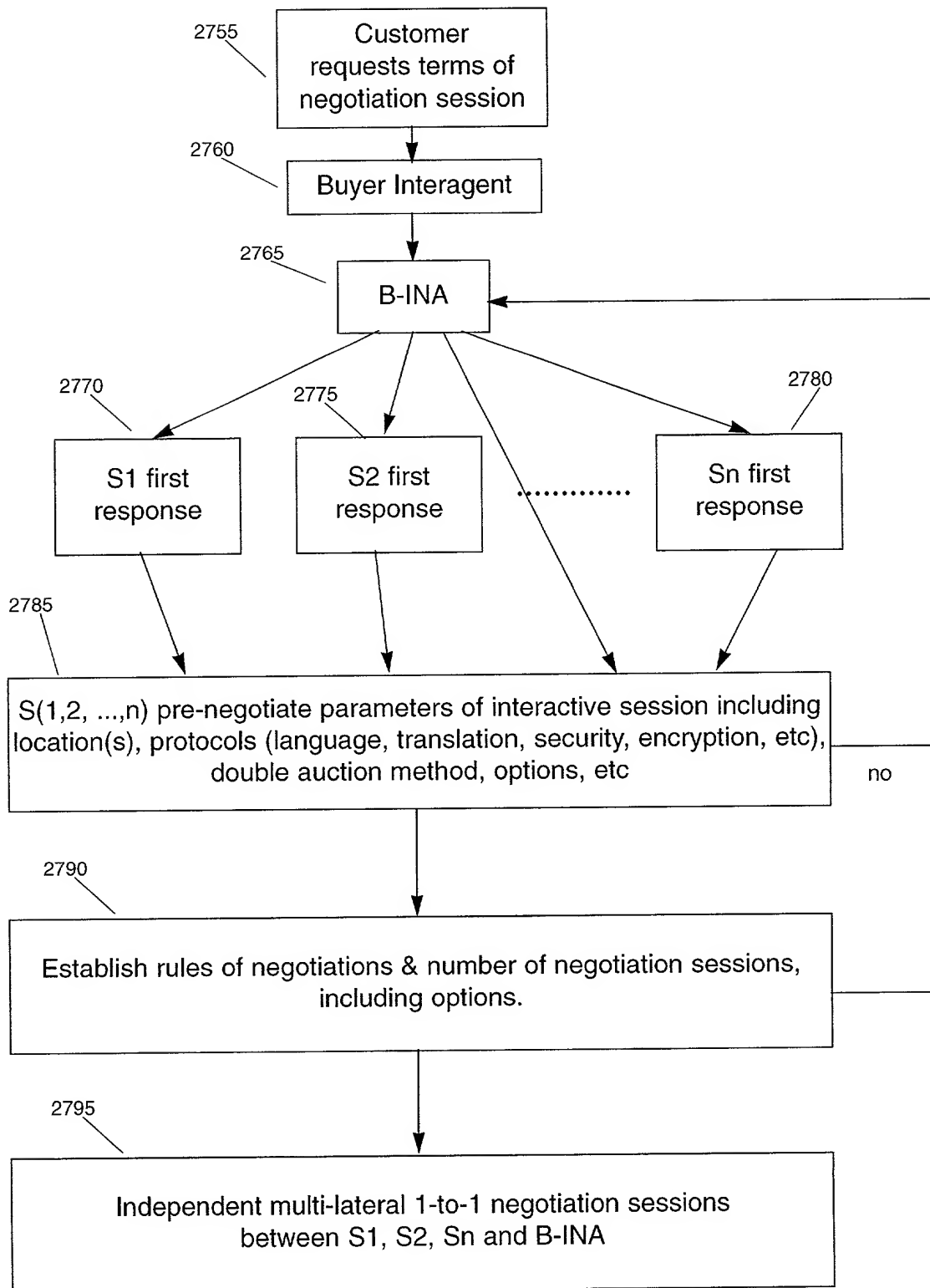


Fig. 28: Time-Based Negotiation Strategy Concealment

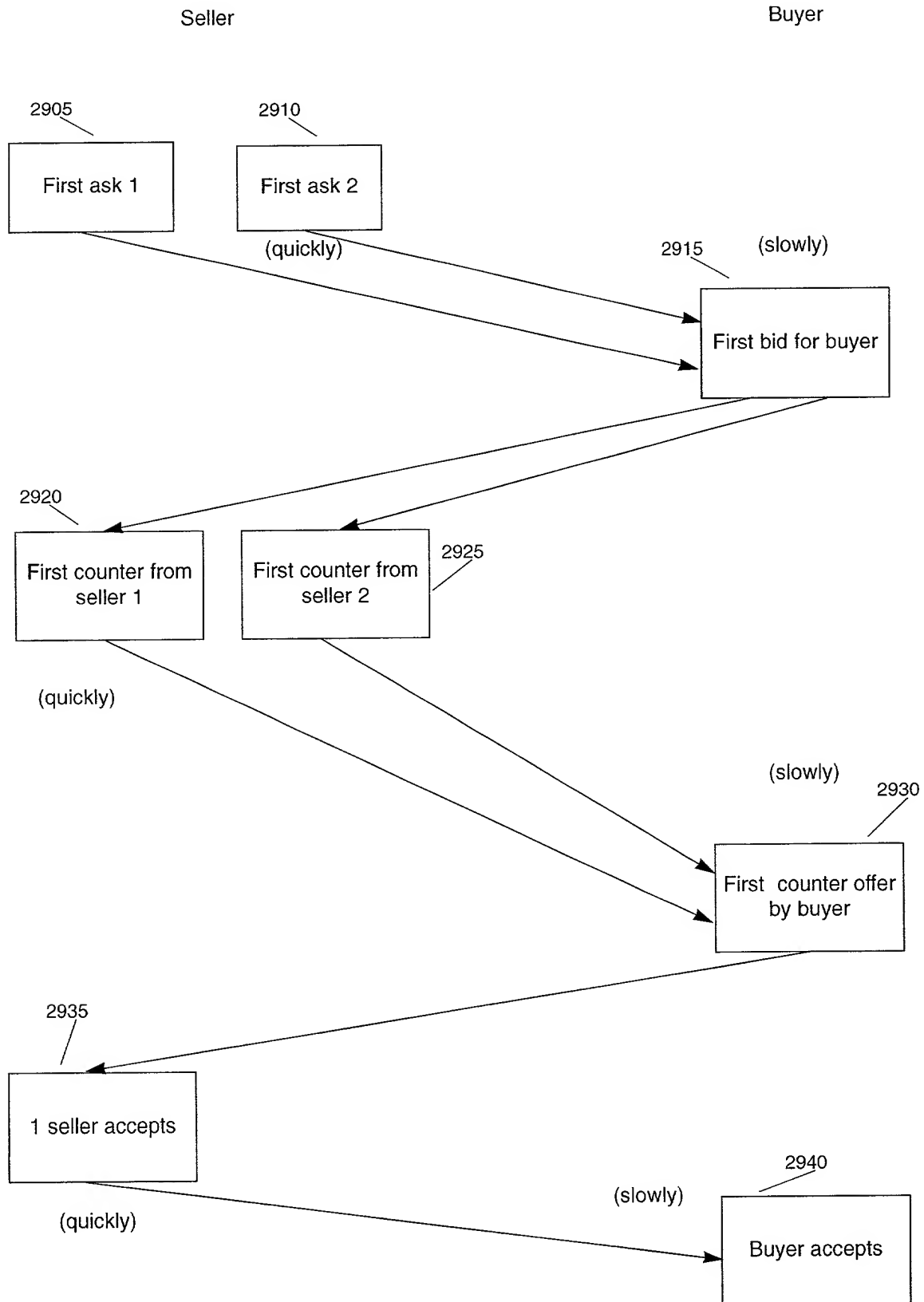


Fig. 29: INA Logistics

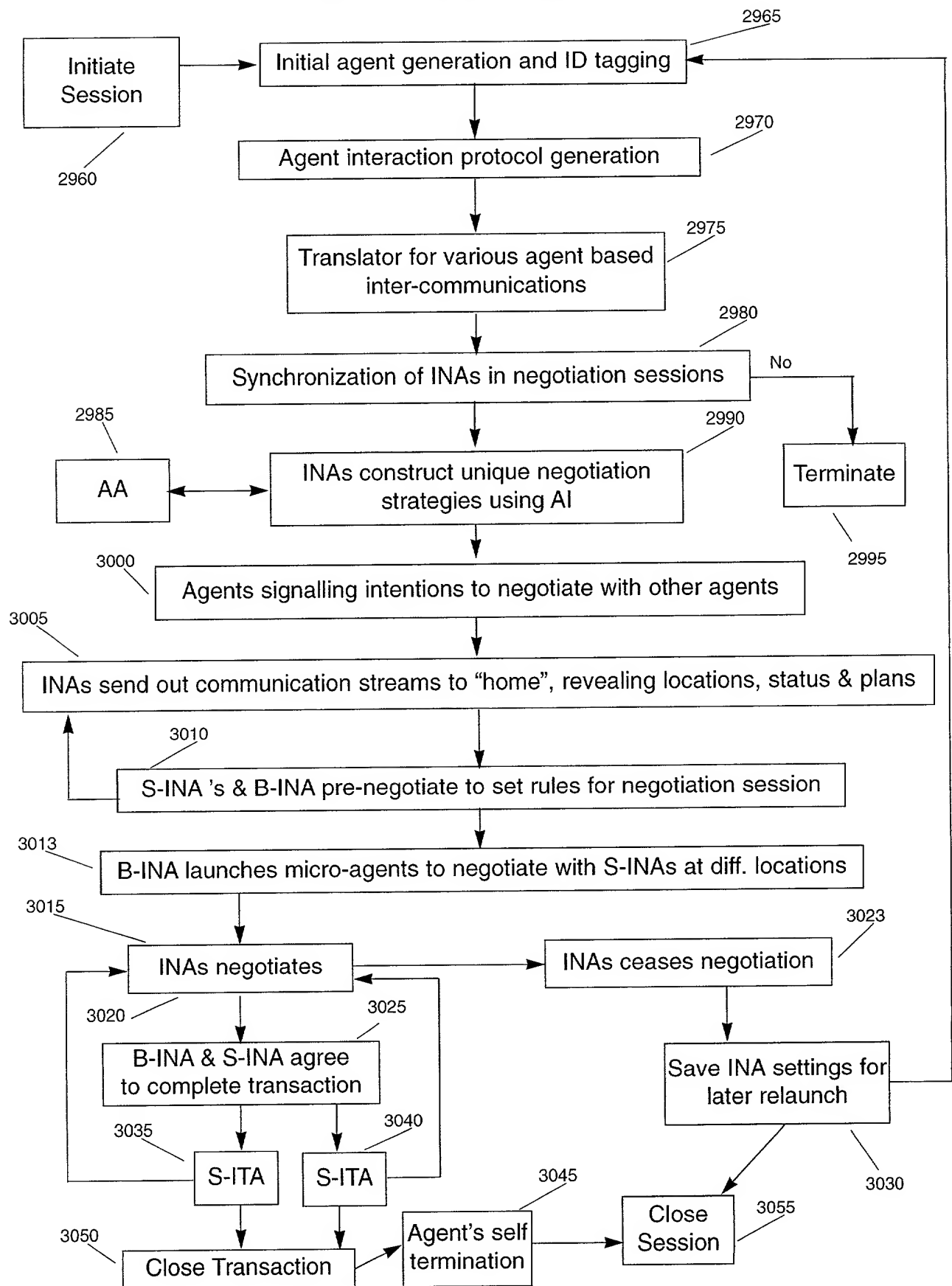
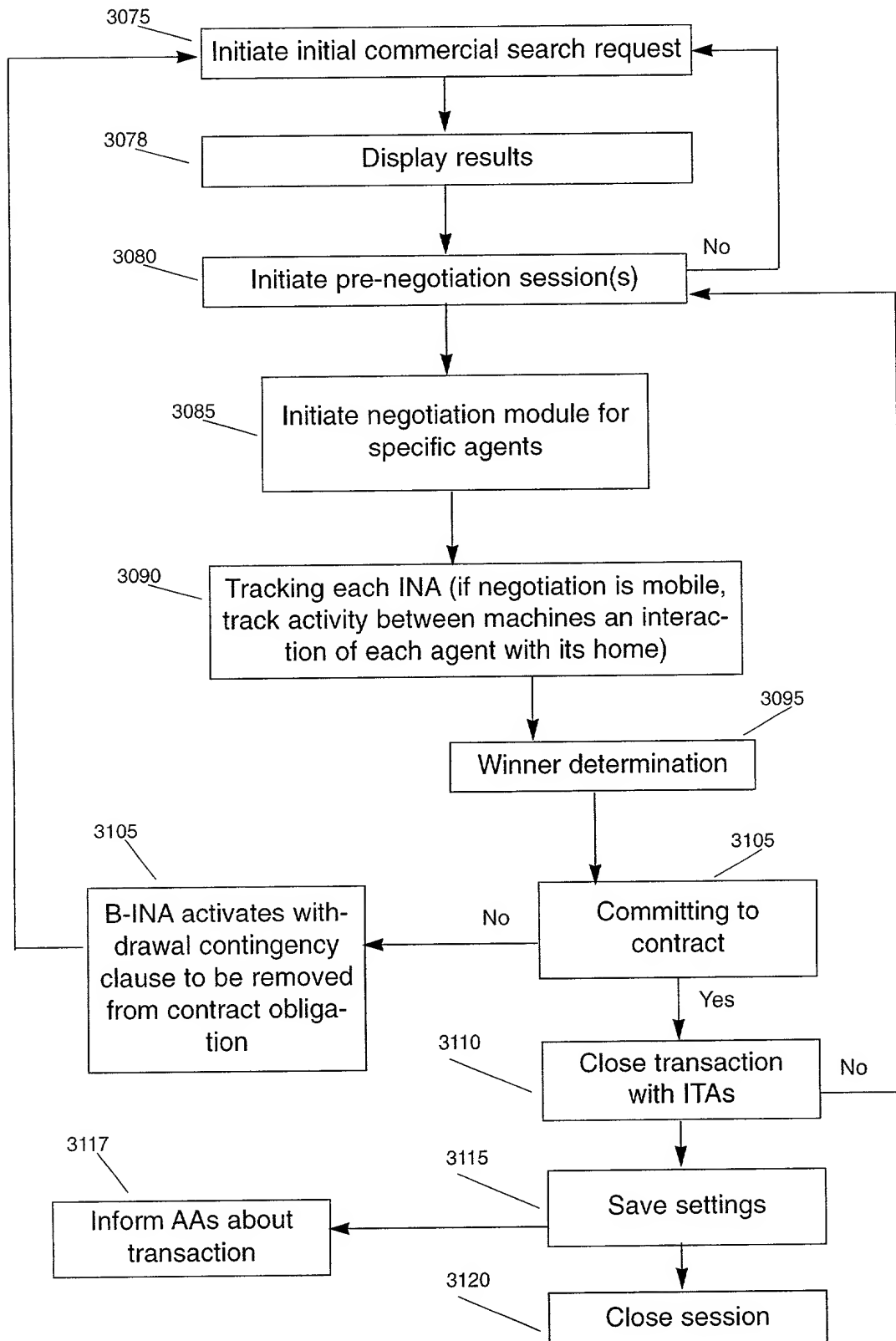


Fig. 30: INA Interaction Sequence #1



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Fig. 31: INA Interaction Sequence #2

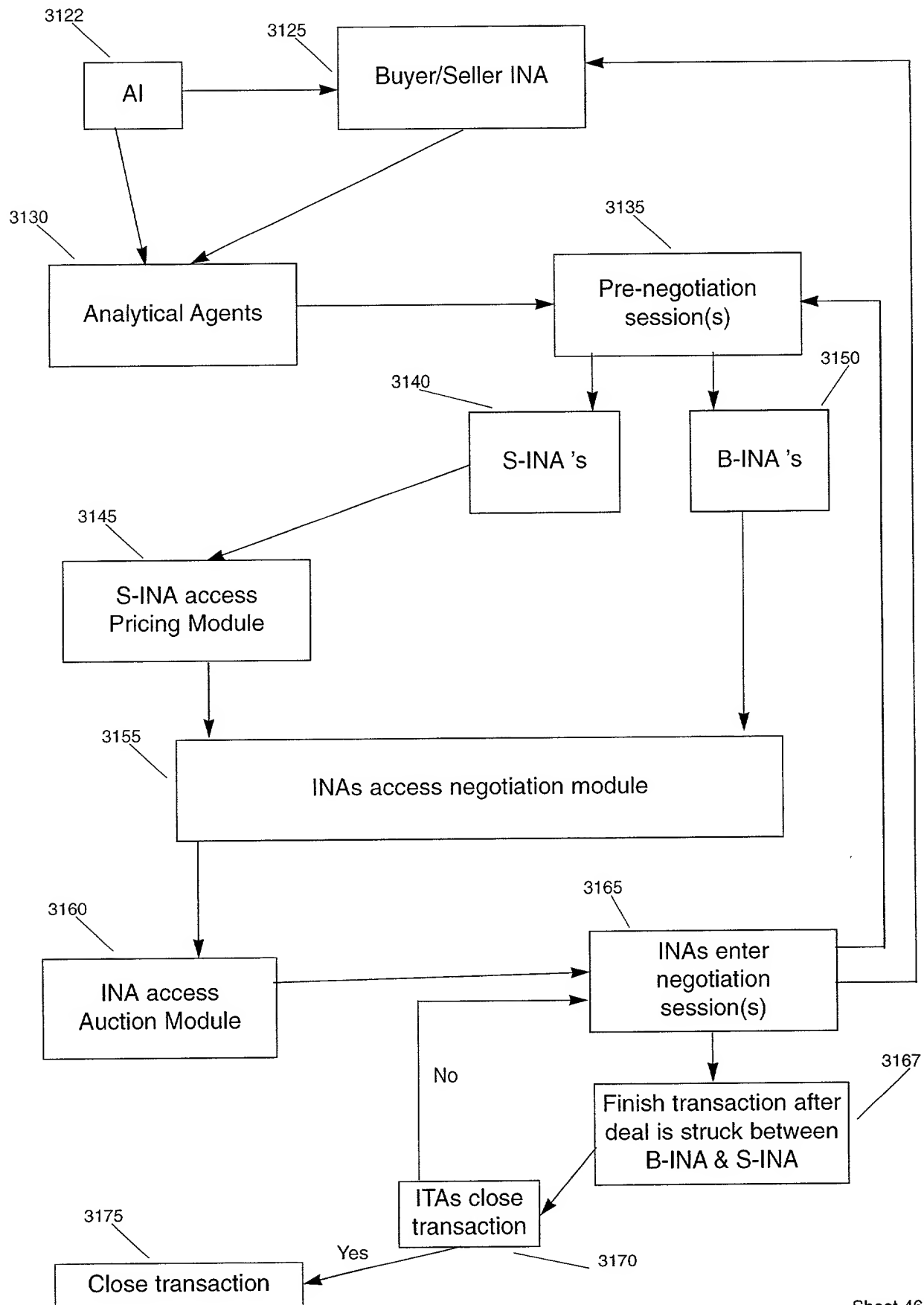


Fig. 32: INA Architecture 1 (First part interactions)

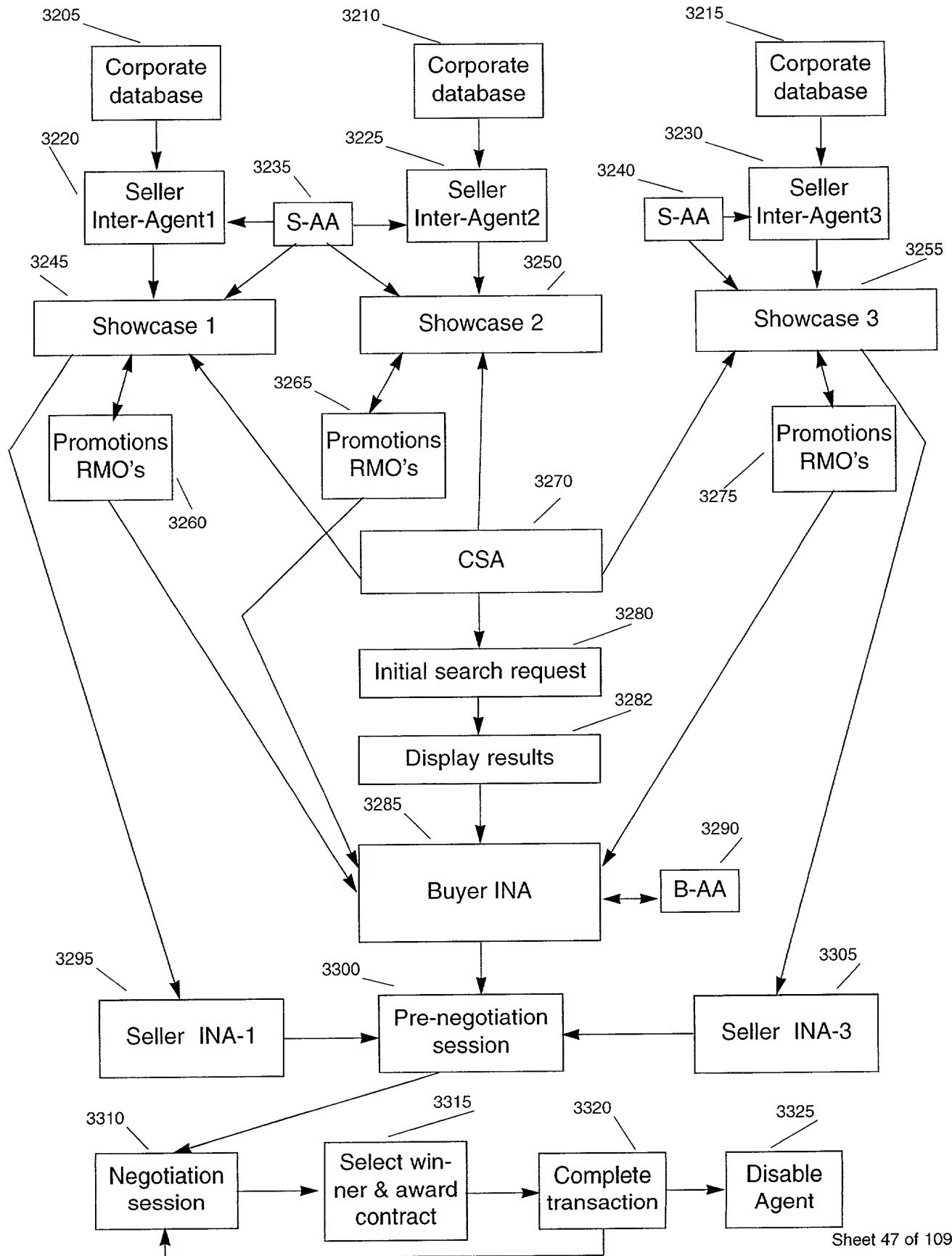


Fig. 33: INA Architecture 2 (Negotiation interactions)

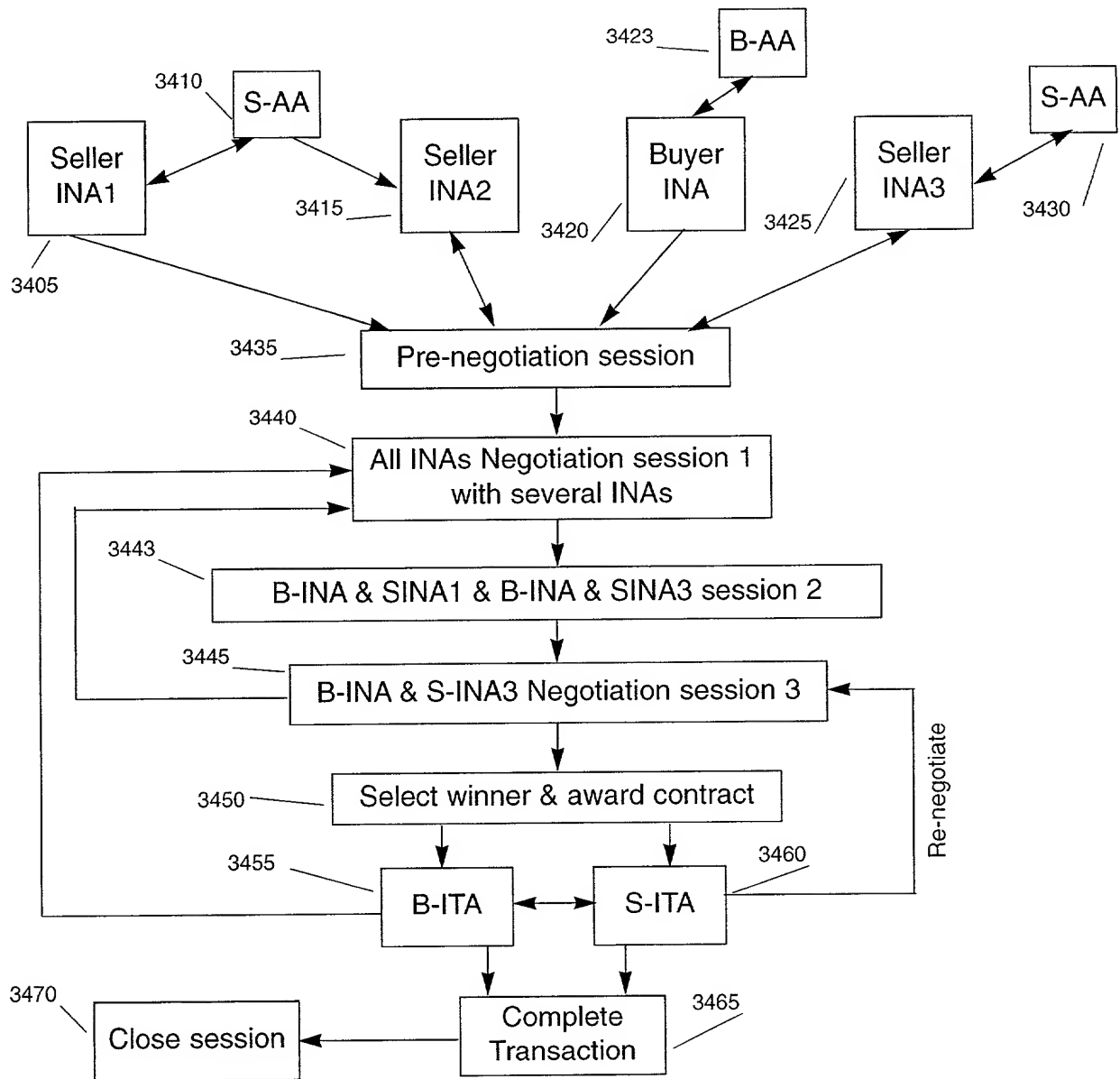
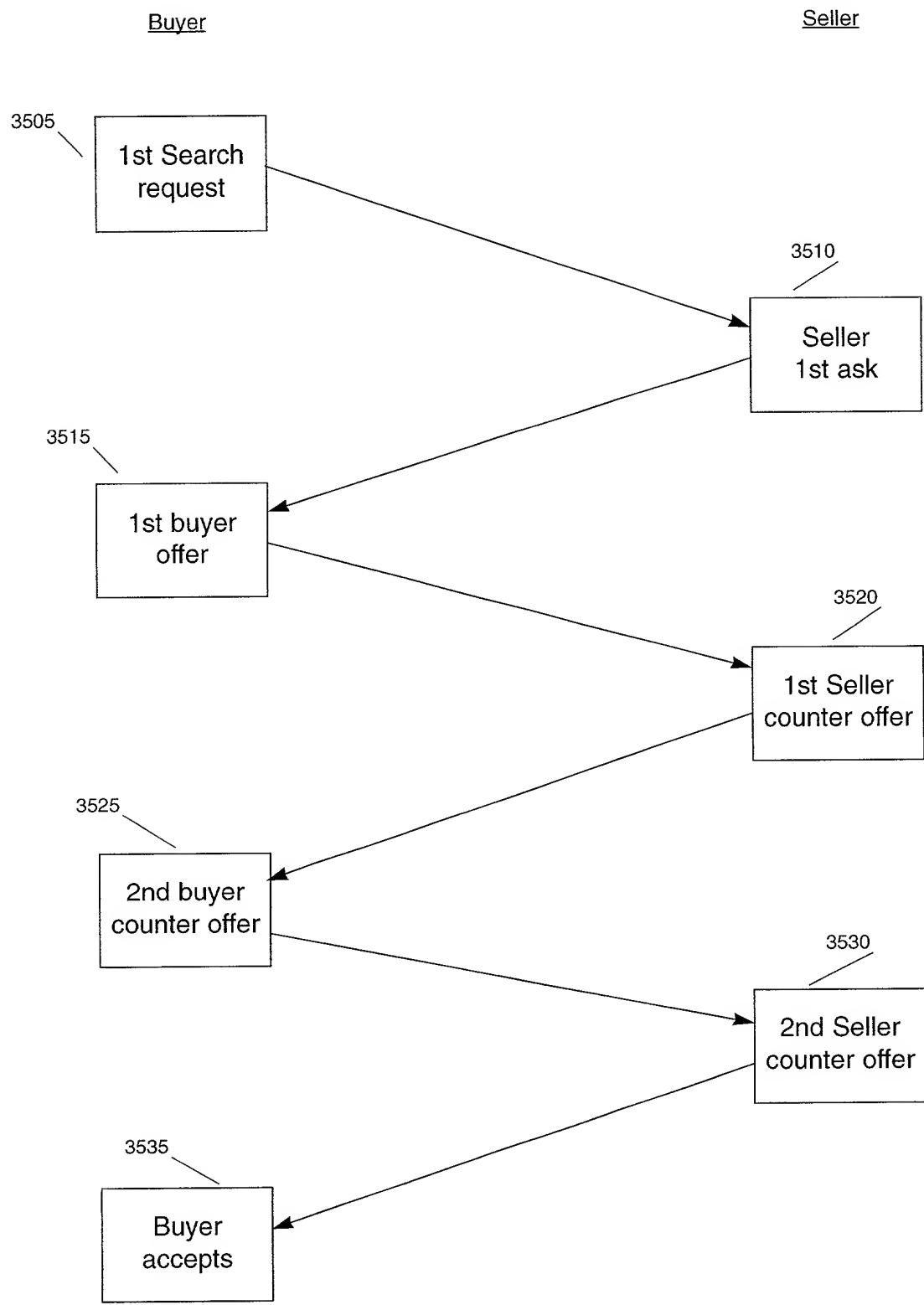
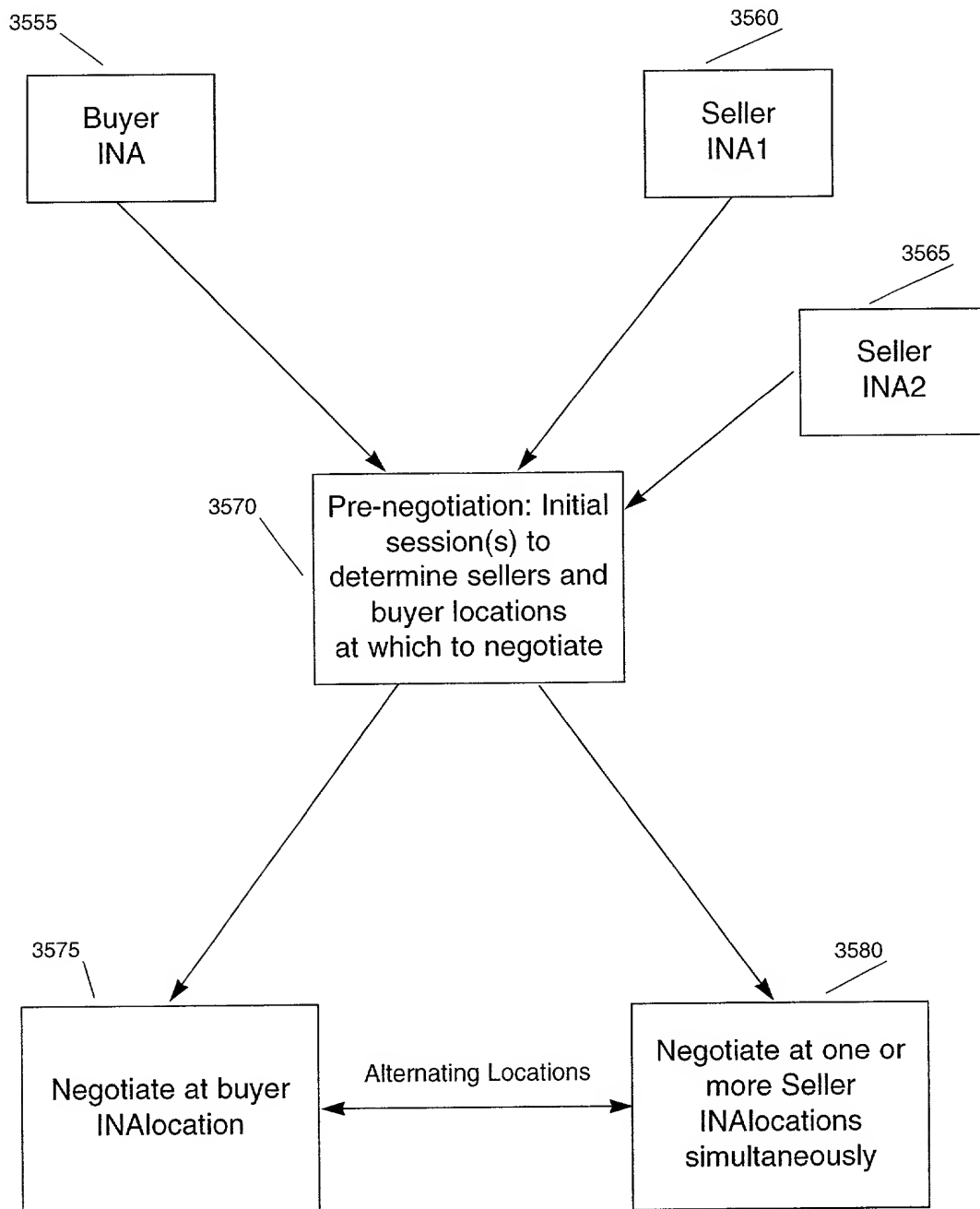


Fig. 34: INANegotiation Time Based Sequences



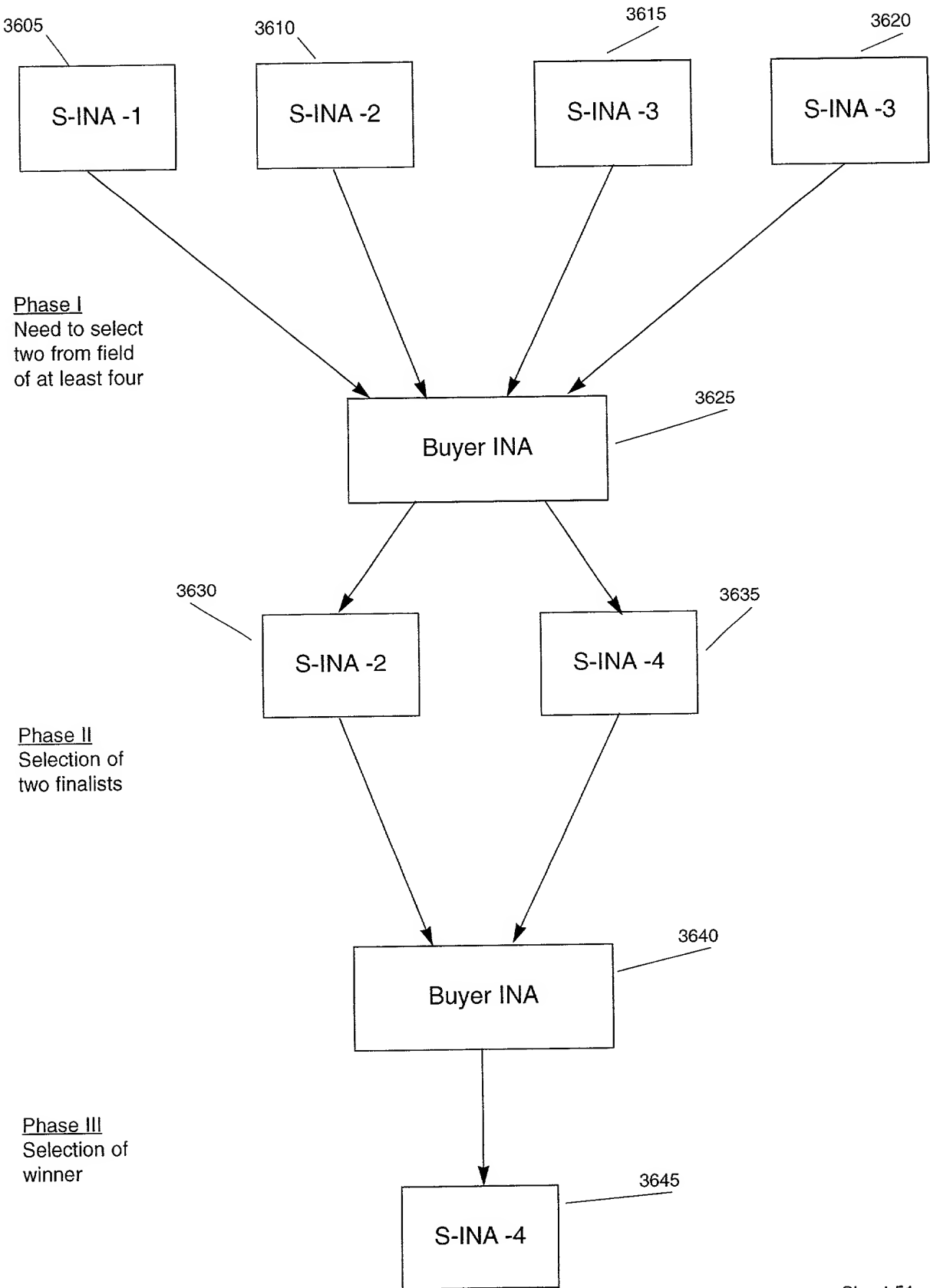
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Fig. 35: Initial INA Mobile Location Protocol Settlement



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TOP SECRET

**Fig. 36: Tournament Configuration of
INA Winner Determination**



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Fig. 37: Multivariate Negotiation

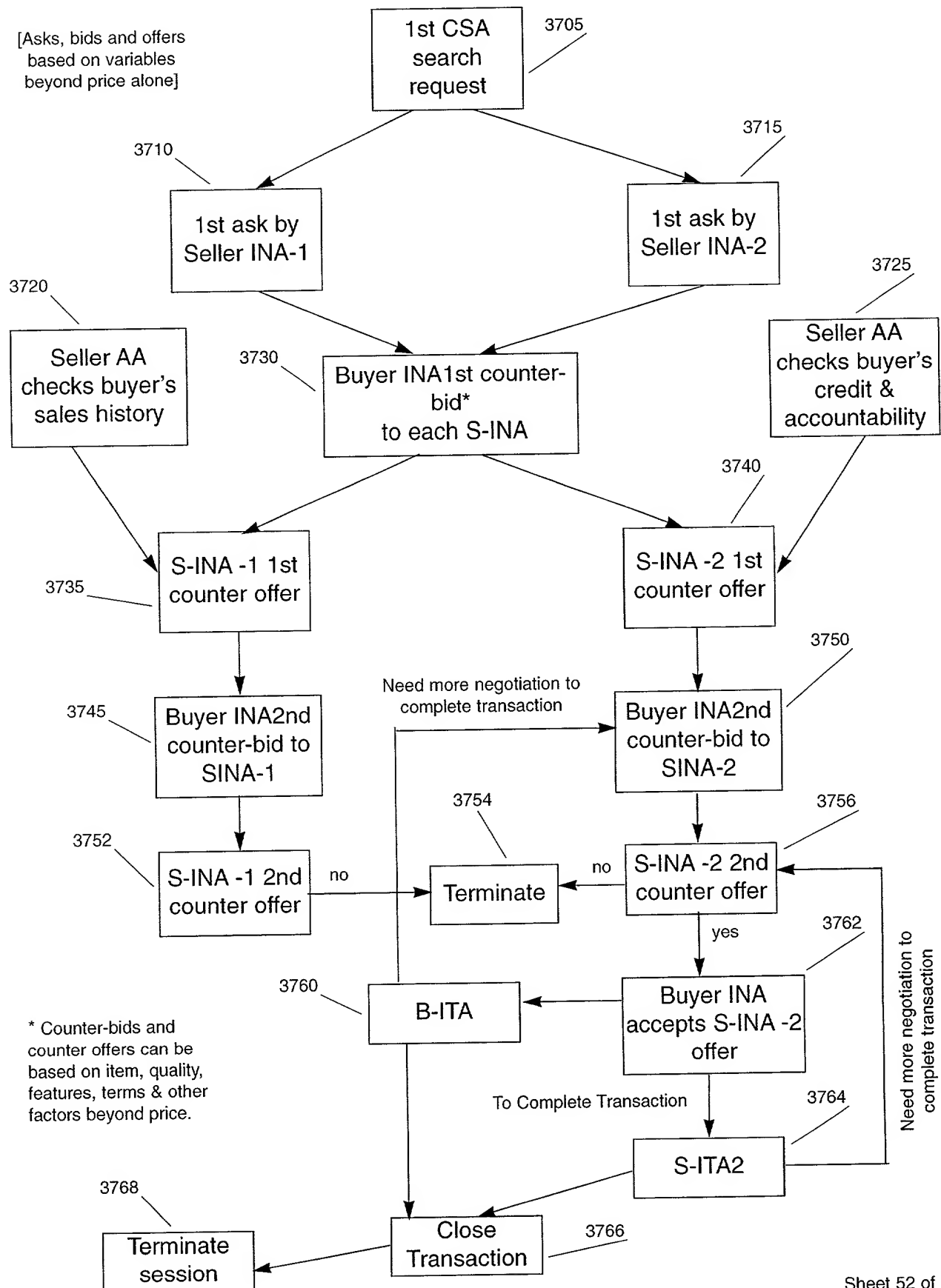


Fig. 38: Demand-Initiated Automated Negotiation Sequence Compromise Process Within Pre-established Parameters between One Buyer & One Seller

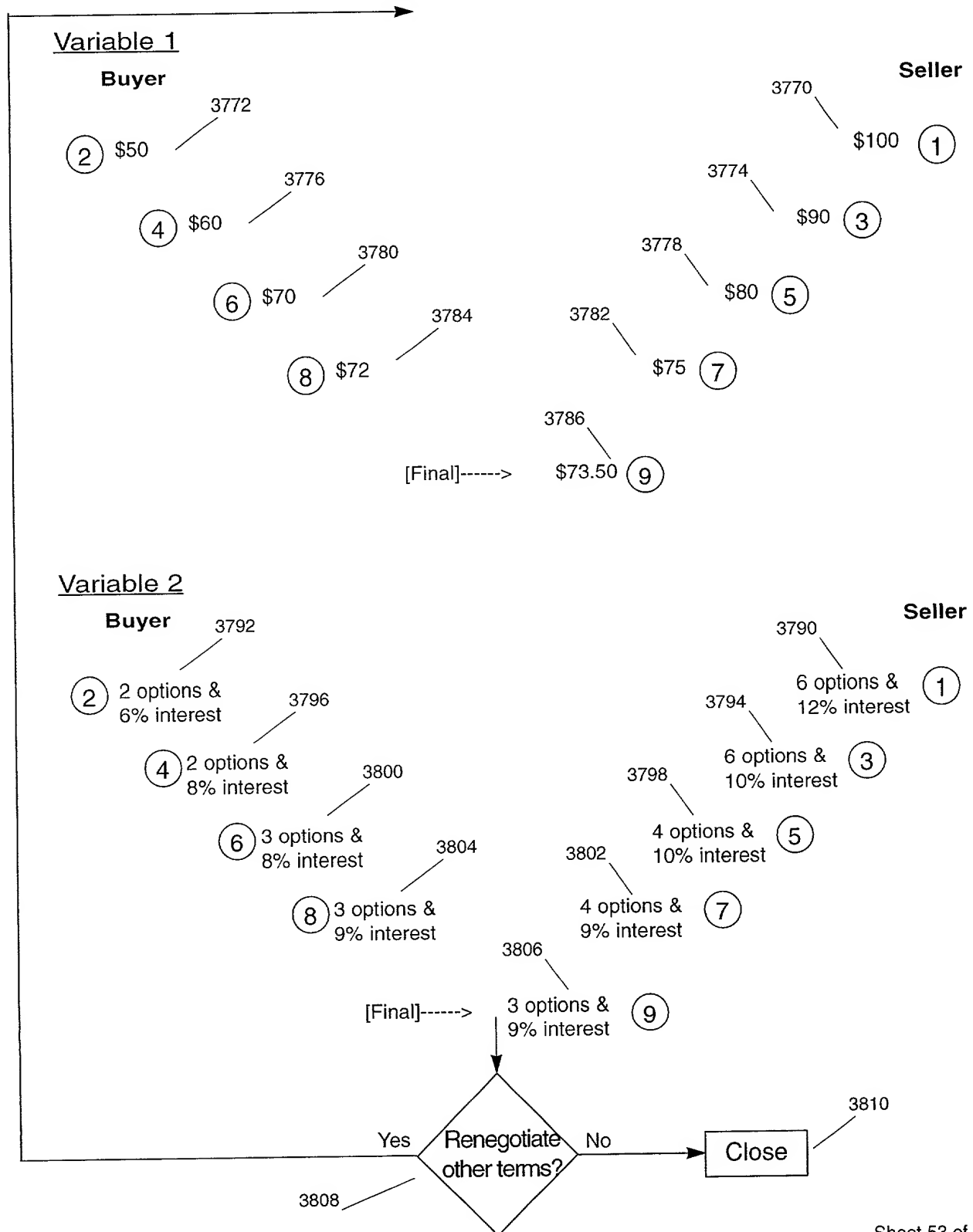
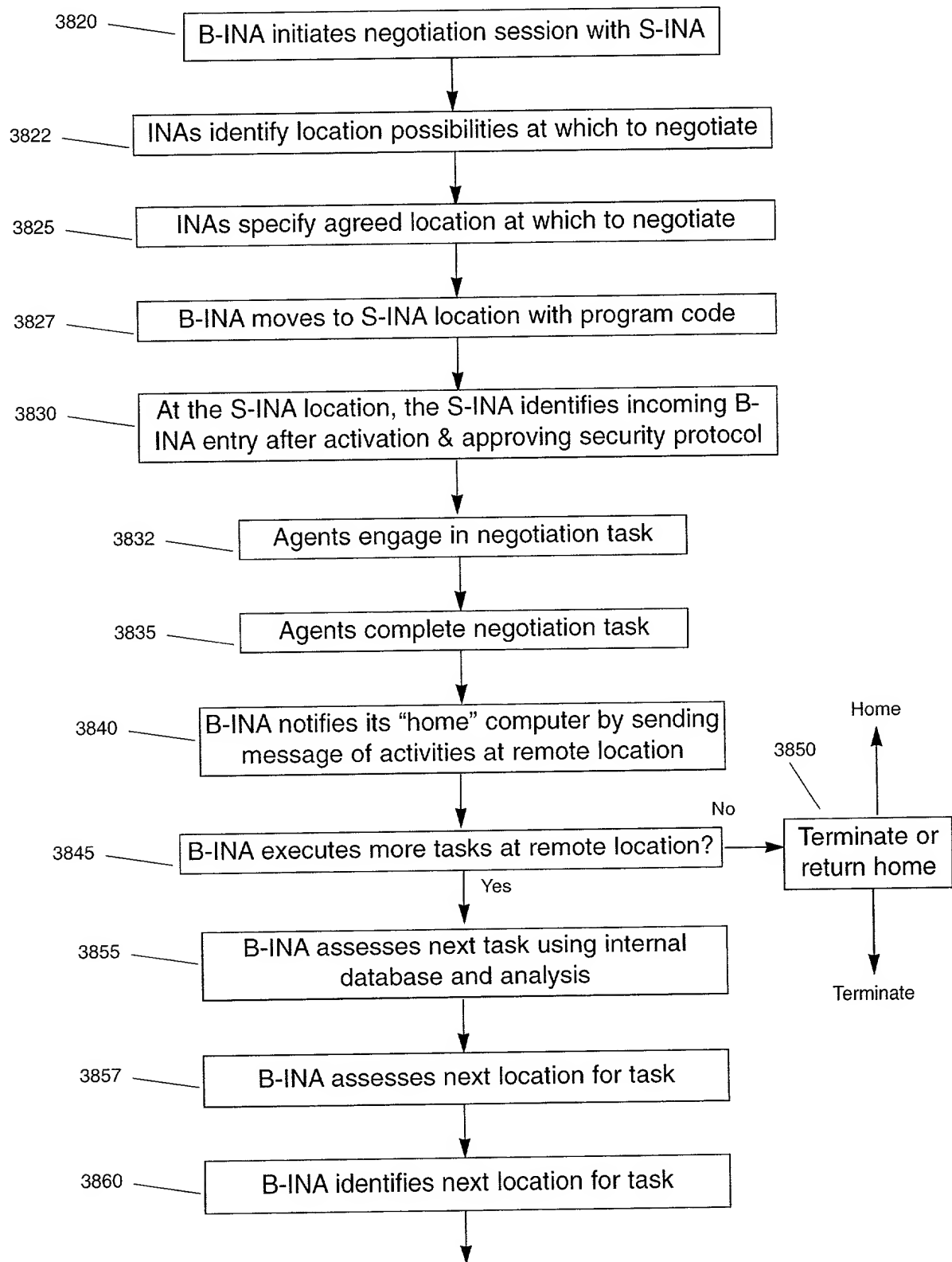
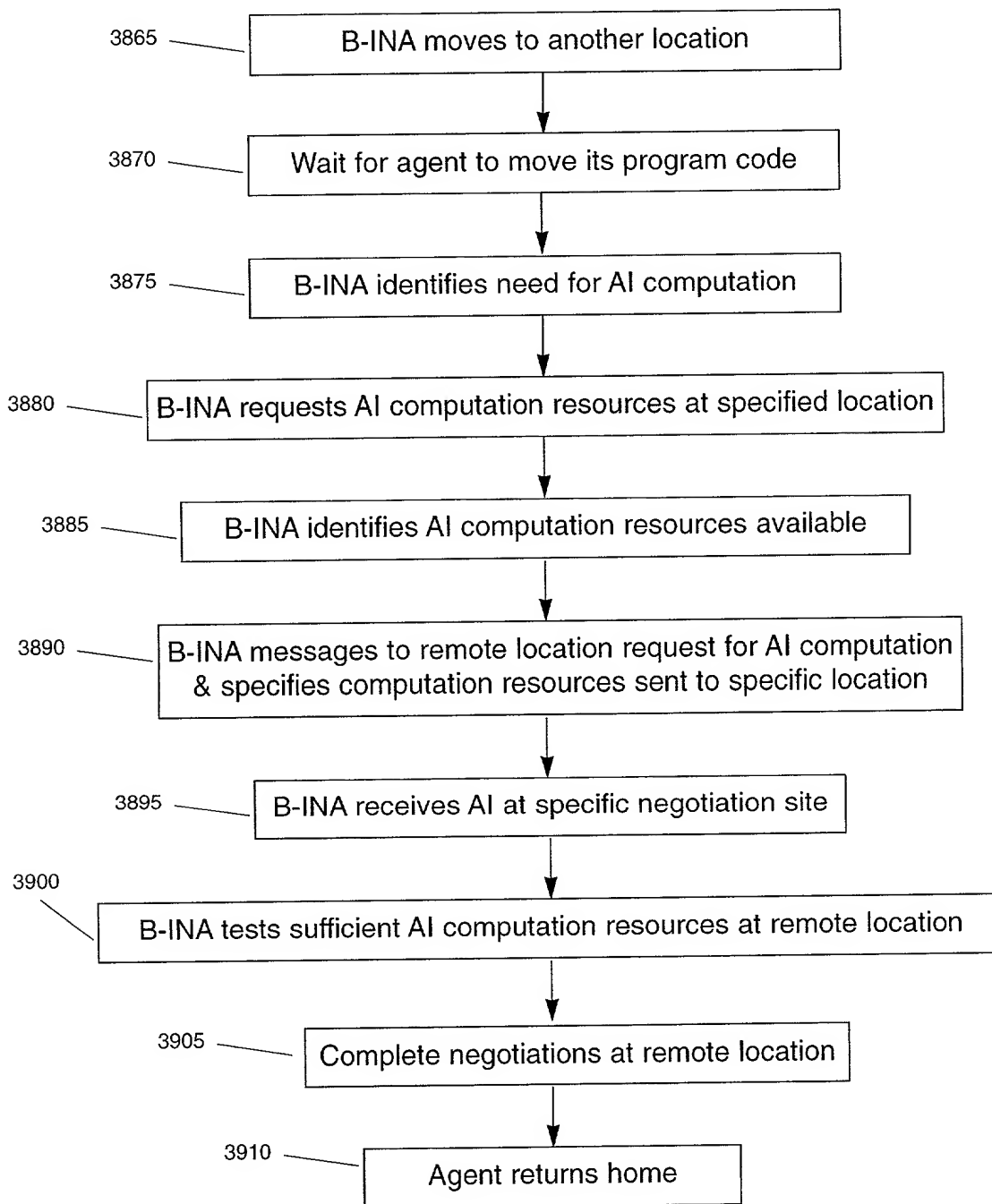


Fig. 39A: Negotiation in a Distributed System with Mobility



**Fig. 39B: Negotiation in a Distributed System with Mobility
(Continued)**



**Fig. 40: Multi-lateral Distributed Competition
(Competitive Double Shout Negotiation)**

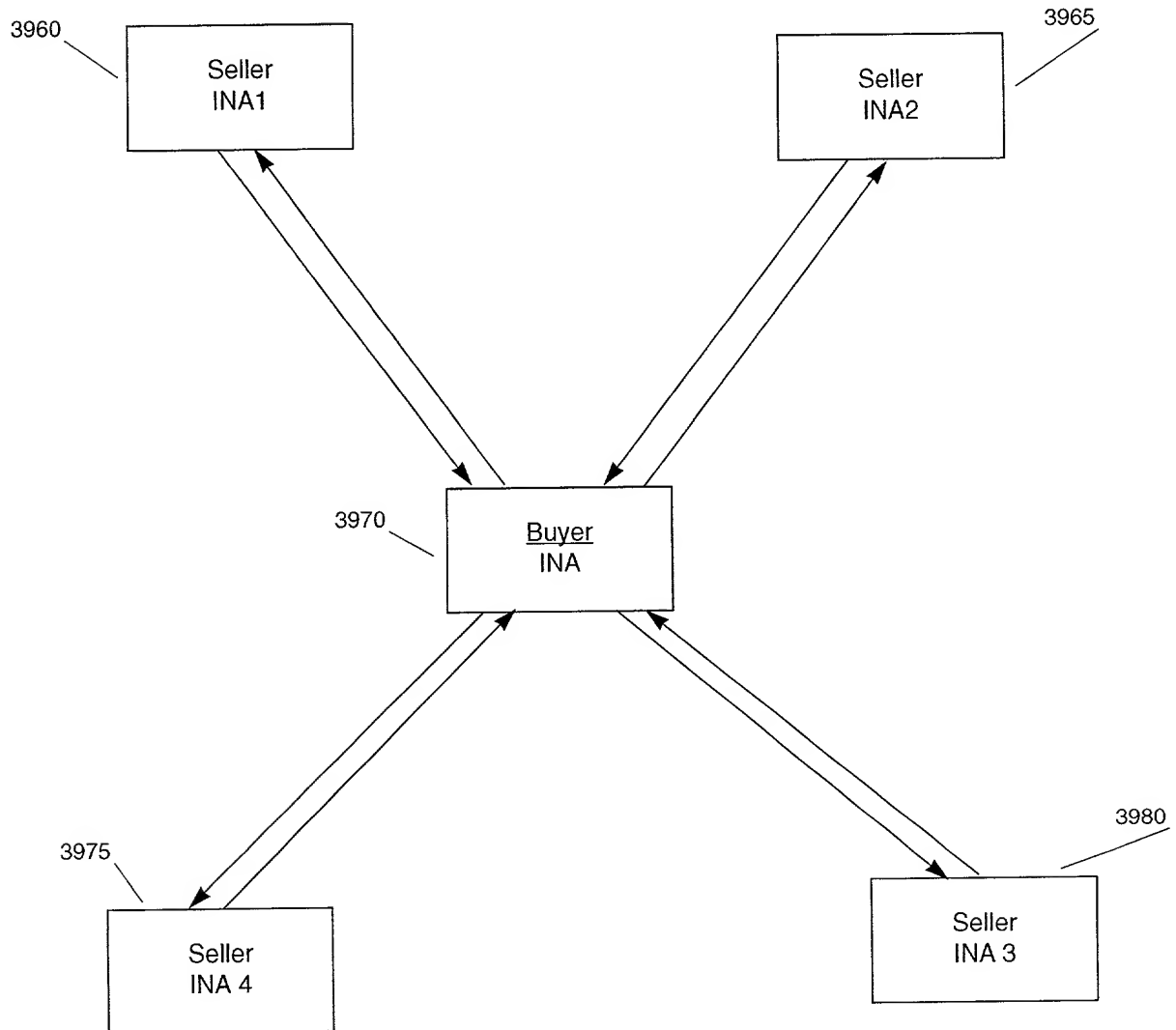


Fig. 41: Negotiation Module: Negotiation Method Schema

1 to 1 Interactive Negotiations

<u>Kinds Of Goals</u>	<u>Cooperative Goals</u> (Zero-Sum Game)	<u>Competitive Goals</u> (Zero-Sum Game)
Short Term goal (price - maximization)	1) Exchange-based approach: Trade-off of terms/variables between parties a) matching of interests: ascertain mutual interest with overlapping sets...	1) dialectical approach: give & take of opponents until resolution a) [position description & justification] explanation based: each position advances and develops b) [Interrogation] argumentation: critique of opponent's position*
-vs-	b) prioritizations of preferences: hierarchy of similar priorities	c) [Ascertain mutual self-interest] Assessing overlapping interests d) Selecting common sets
Long-term goal (relationship management)	2) Problem-solving approach: parties seek a common solution a) assessing common interests among different positions b) compromise of positions to a common set shared by parties	*Anticipate opponent's strategy
<u>Constraining Factors</u>		Non-Zero-Sum Game
1) Time constrained: multi-sessions as instrumental changes		1) deterrence approach: behaving so that competitors do not get without higher cost a) bidding aggressively and/or deceptively and then withdrawing
2) Information constrained: less than optimum information	<u>Buyer-Initiated</u>	Seller initiated
3) Choice Constrained: Limiting of options	[Negotiation as adjustment of seller parameters] a) buyer query as initiation b) priority of best and then second best, and then third best, etc...	[Negotiation as disagreement with initial seller promotions] a) promotions or 1st seller bid (result of search query) as 1st point of departure
<u>Terms</u>	Multiple Parallel Interactive Negotiations	
1) Item terms 2) Transaction terms	<u>One to several</u> a) Stopping negotiation when one winner is selected	<u>Several to several</u> Single Item: Stopping negotiation when one buyer & 1 seller is selected Multiple items: a) Stopping negotiation when mutual agreement of multiple parties

Fig. 42: INA Auction Module-Auction Types

Auction Types	
English (Increasing)	Dutch (Decreasing)
Vickrey (second highest bid)	"combinatorial" multiple-item auctions (package deals)
Combinations of auction types	Double-shout

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Fig. 43: Negotiation, Pricing & Auction Module Interactions

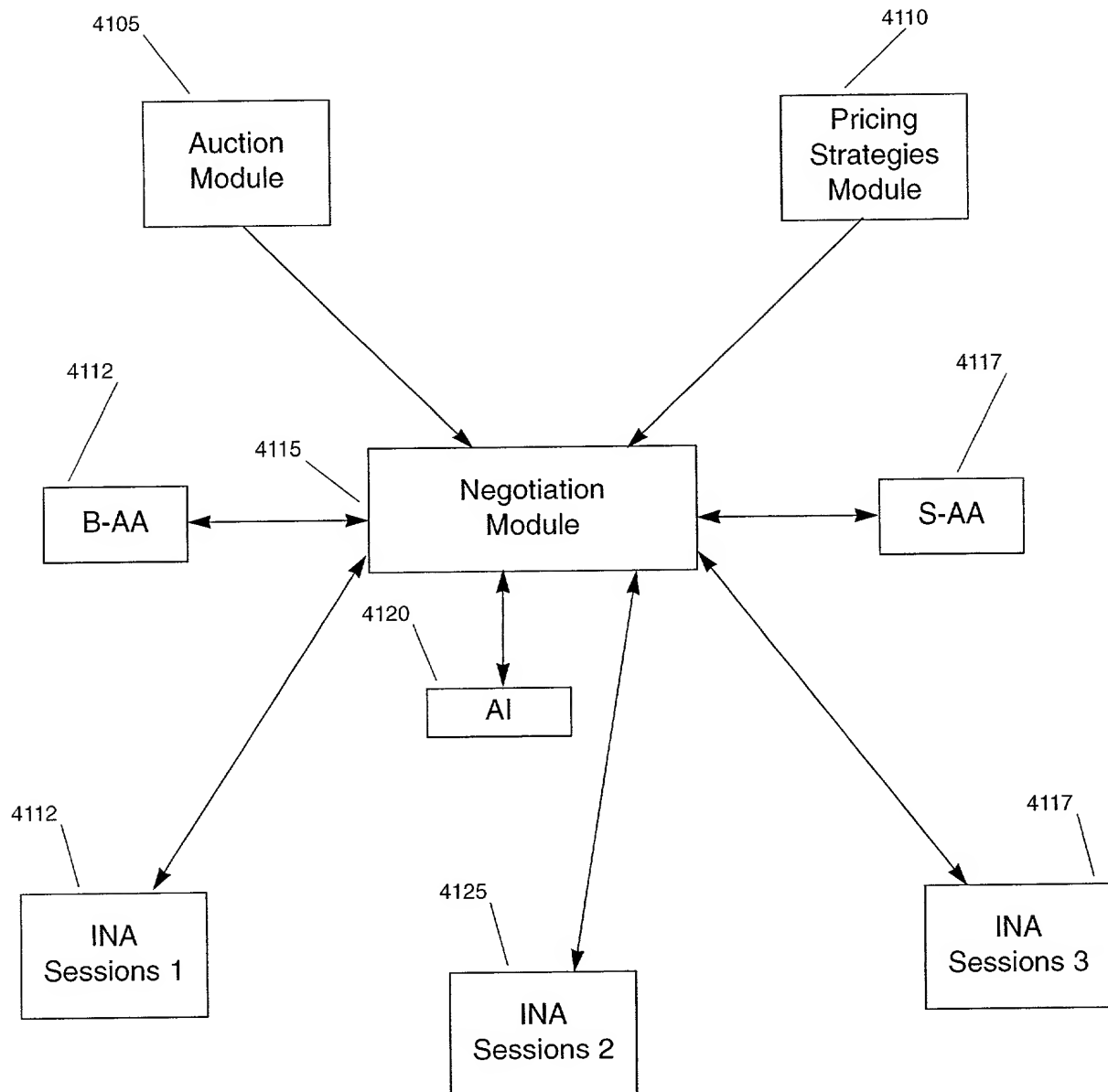
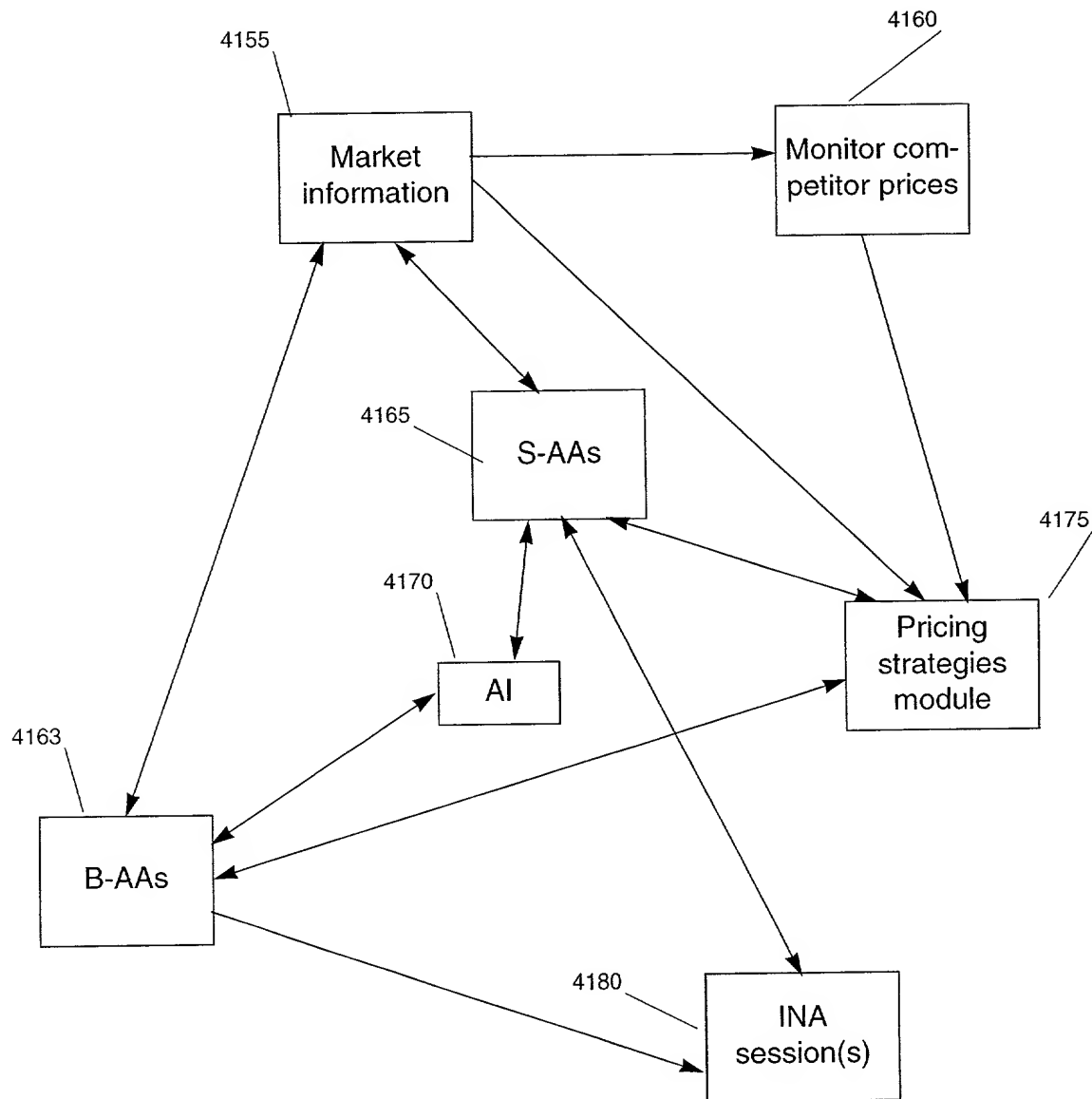


FIG. 43: Negotiation, Pricing & Auction Module Interactions

Fig. 44: Pricing Strategies Module and AA Interactions



**Fig. 46: Neutral Broker Agency
C-INA Intermediation & Aggregation Applications**

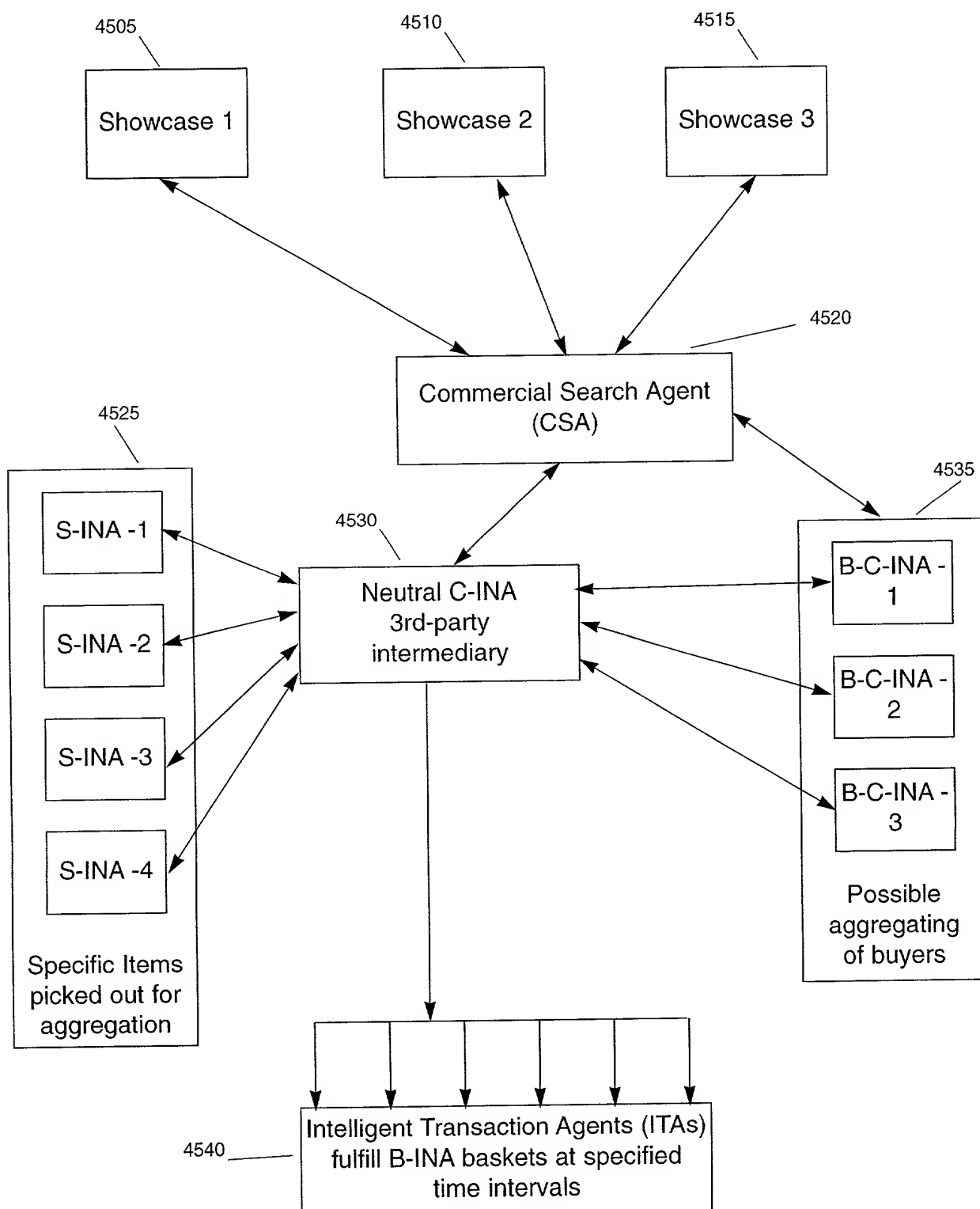


Fig. 47: C-INA Transaction Initiation Sources

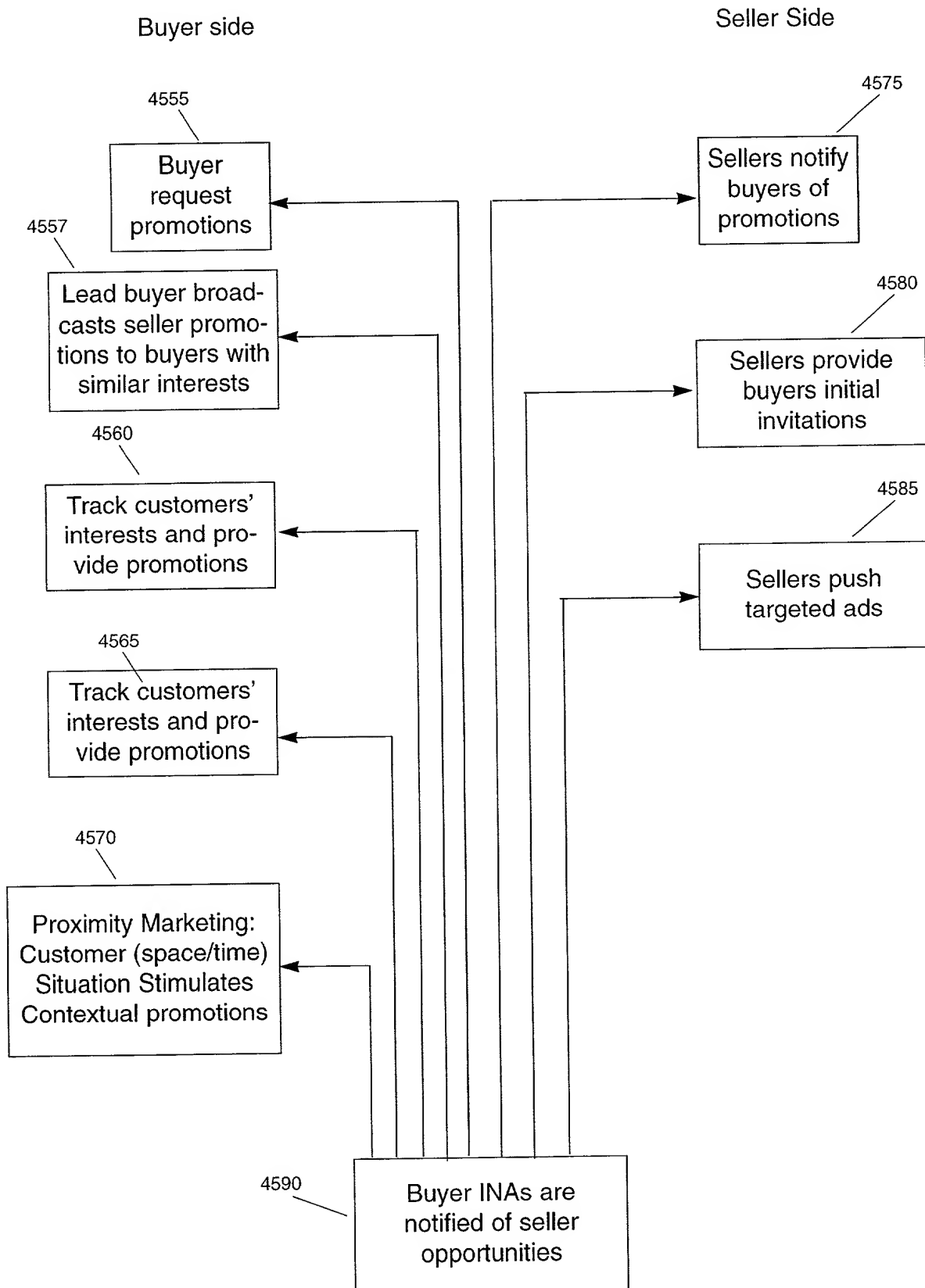
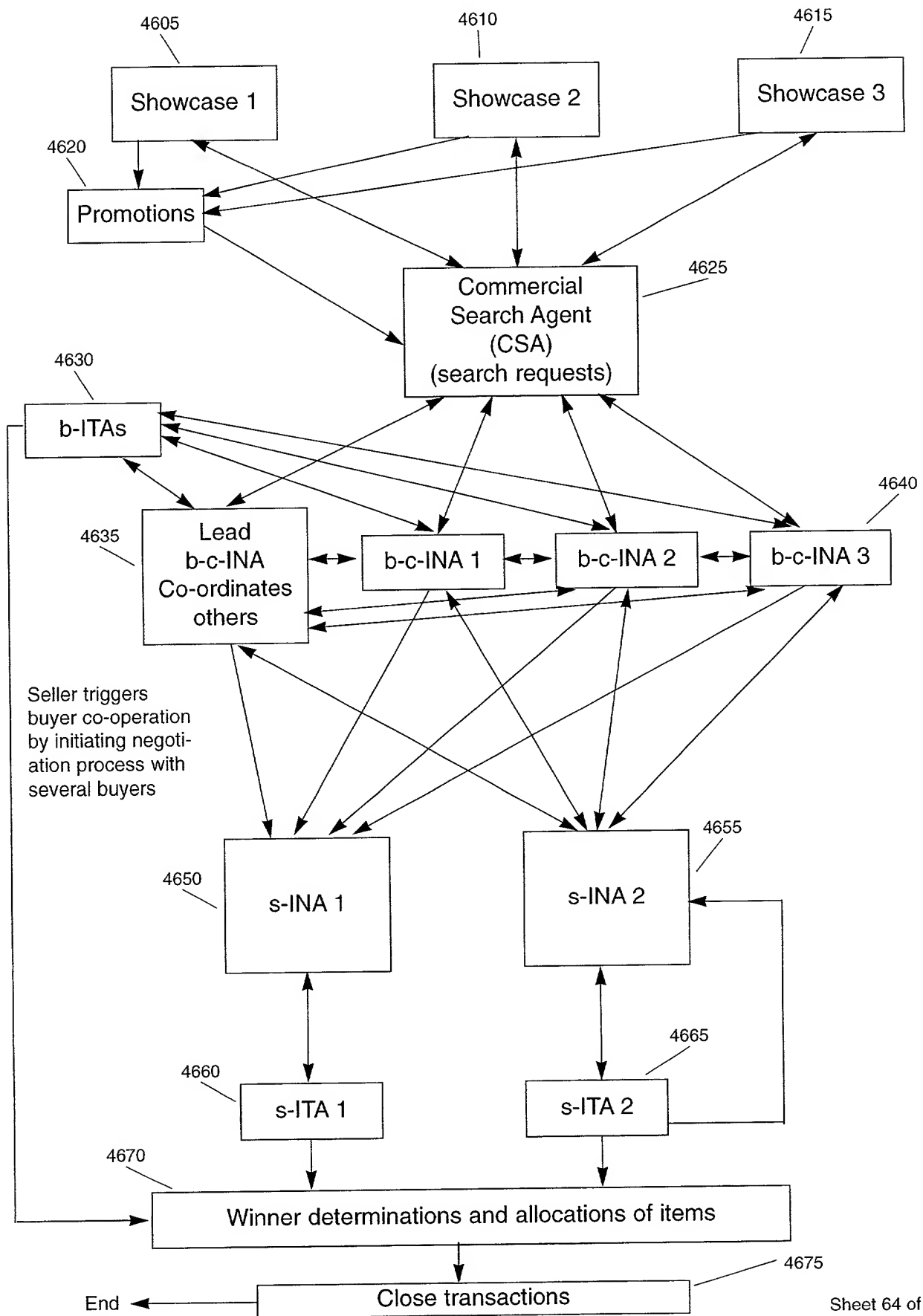


Fig. 48: B-C-INA Aggregation



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Fig. 49: Automated Aggregation Category Structures

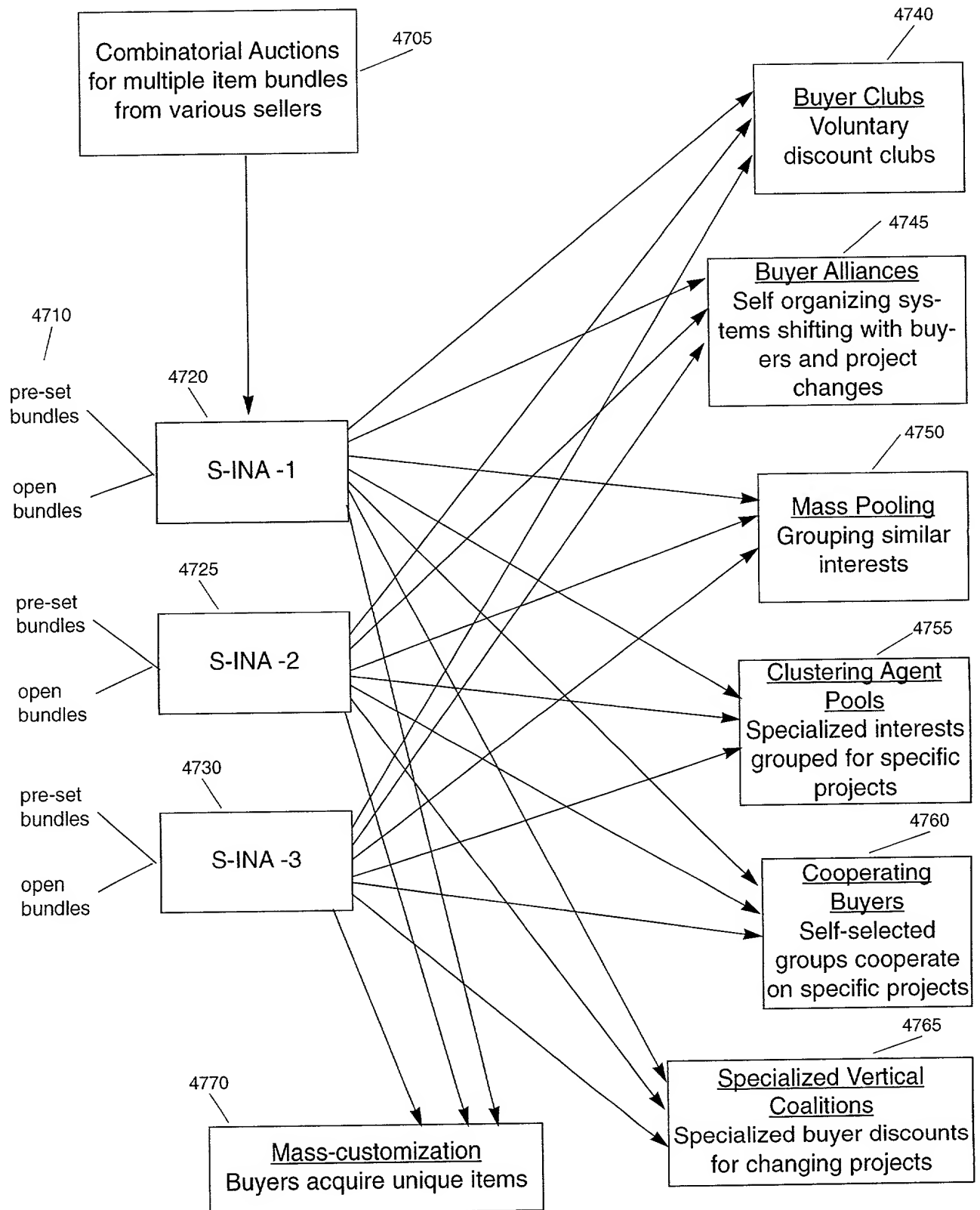


Fig. 50: Aggregation I – Mass Pooling

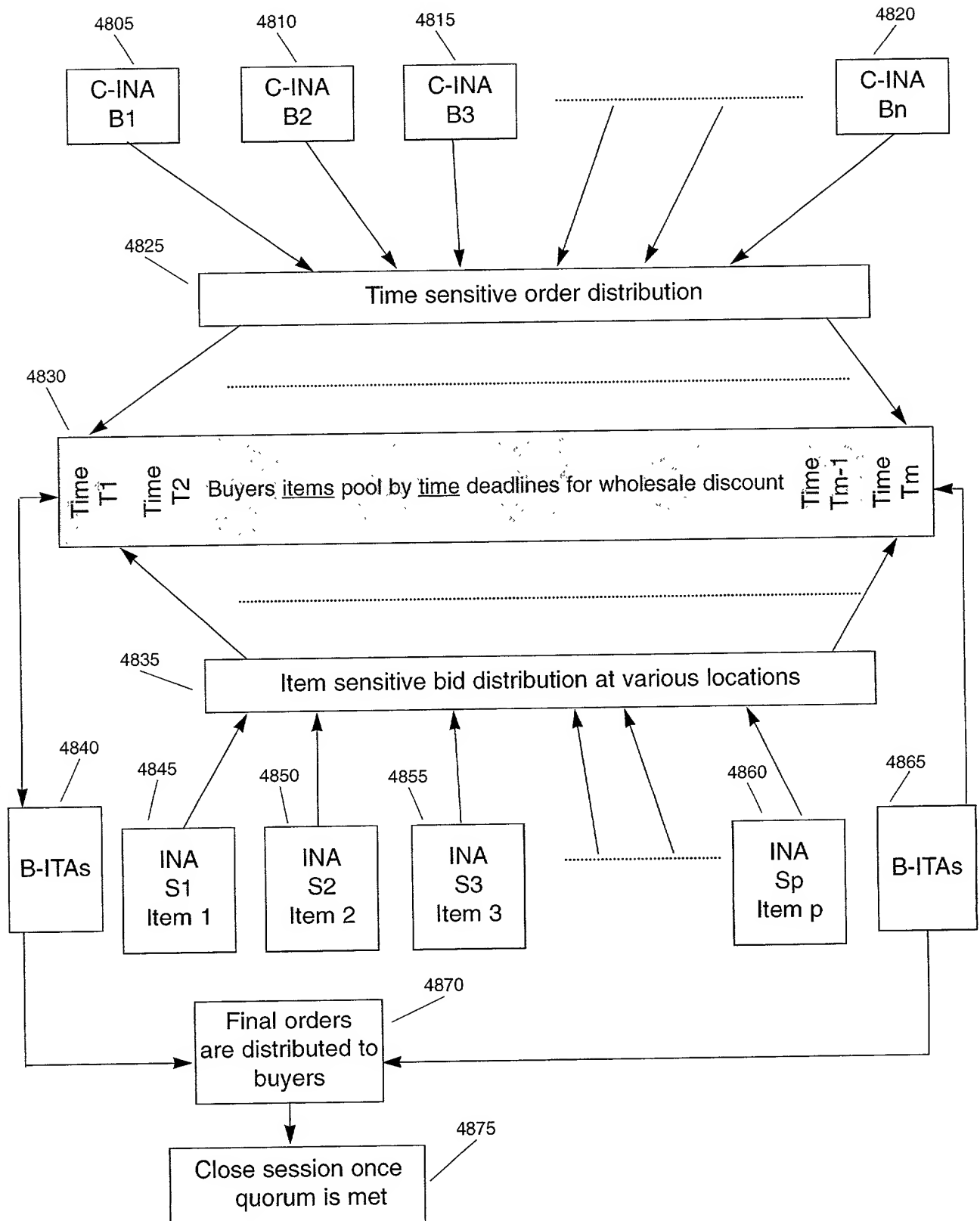


FIG. 50: Aggregation I – Mass Pooling

Fig. 51: Aggregation II–Disintermediated Aggregation Method Prior To Negotiation

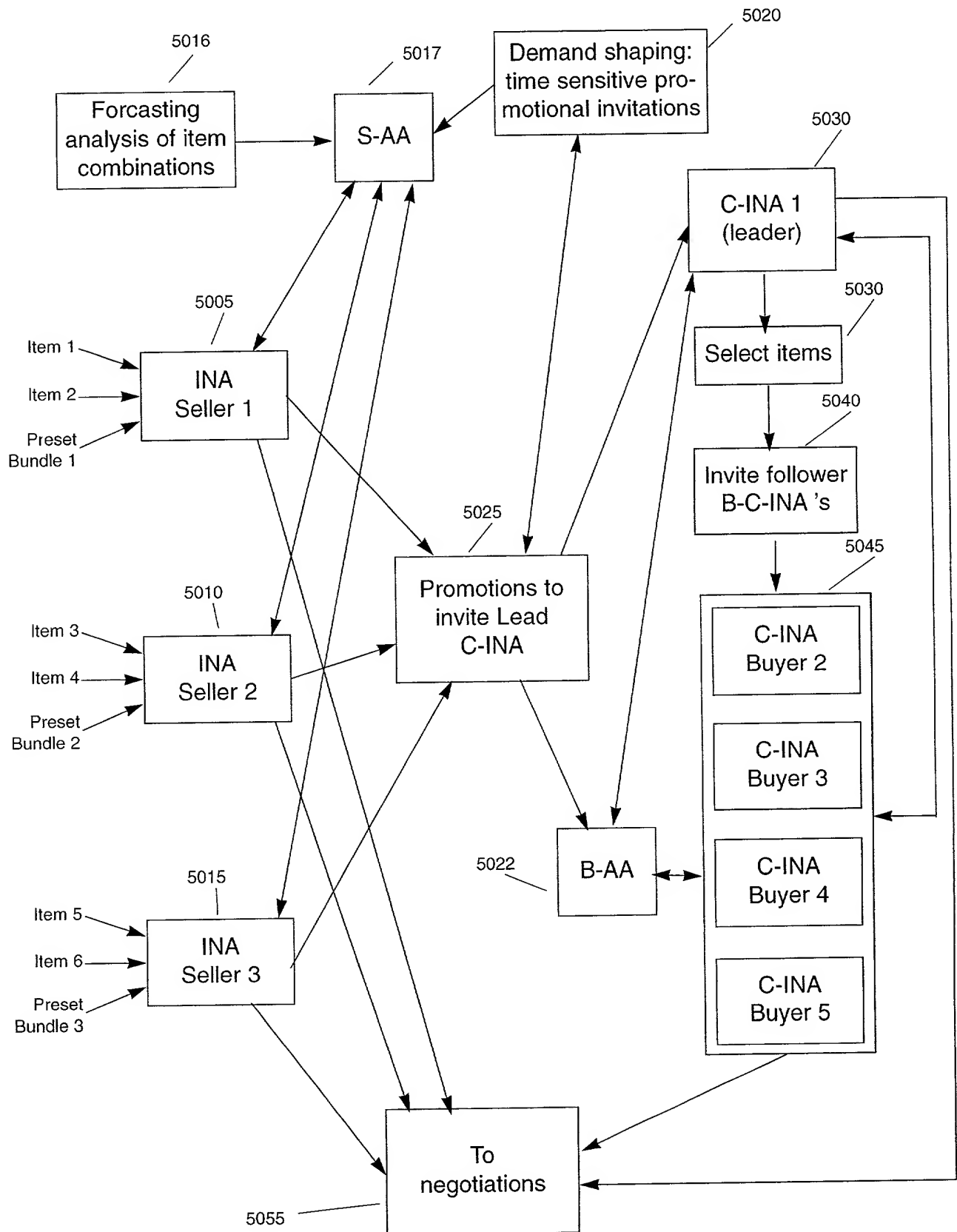
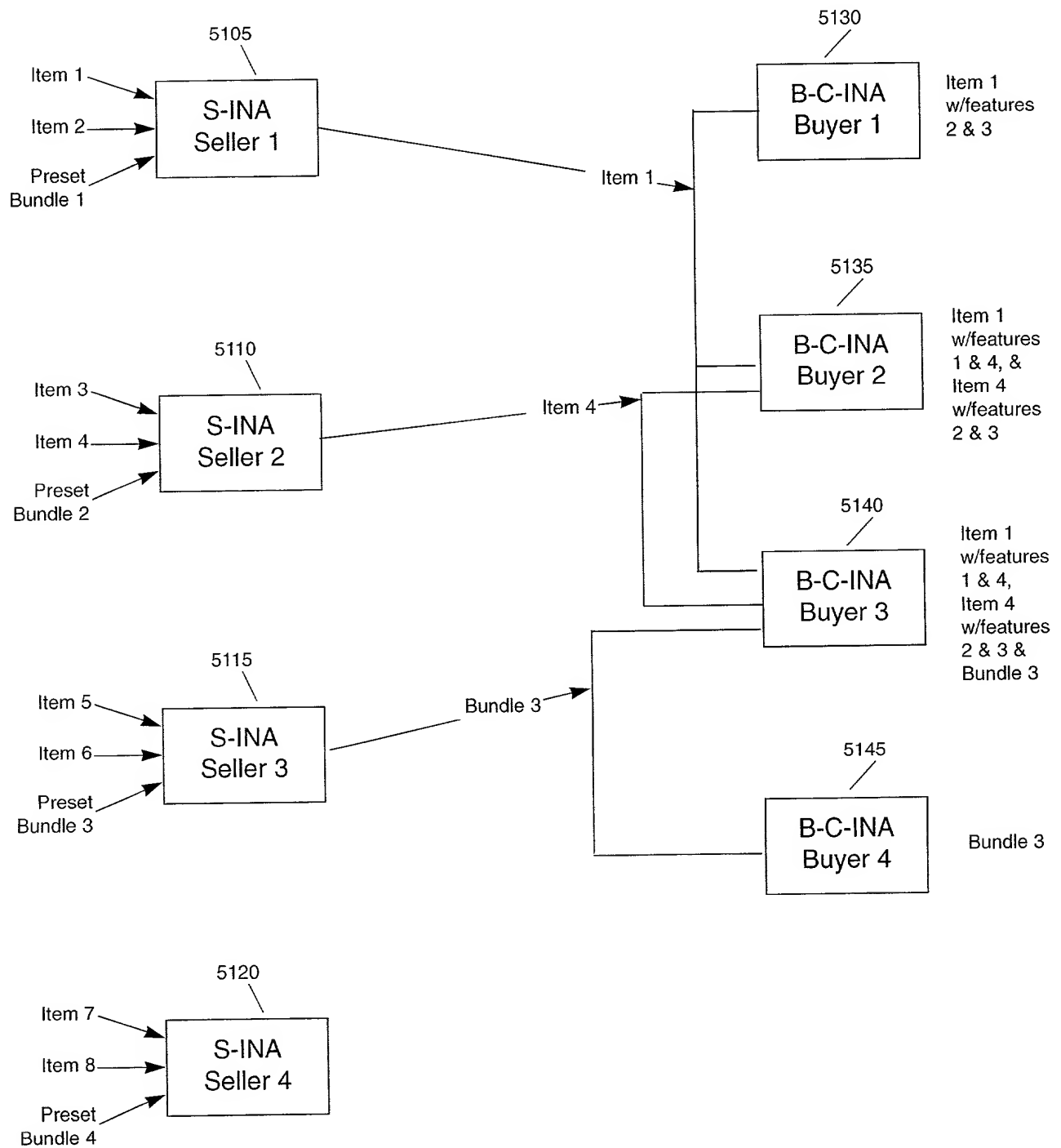
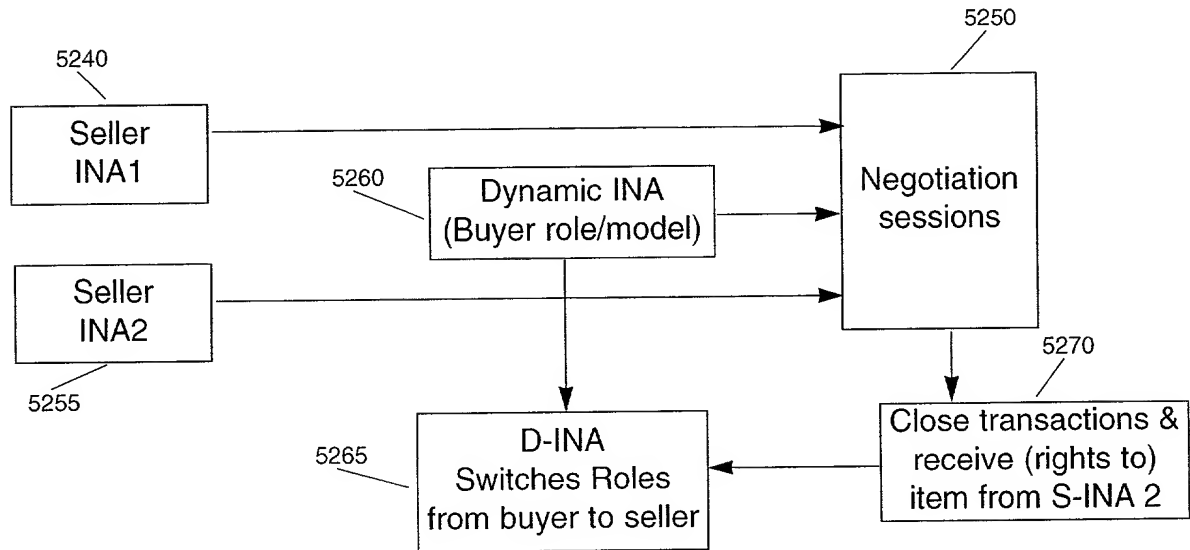


Fig. 52: Aggregation III – Disintermediated Mass Customization

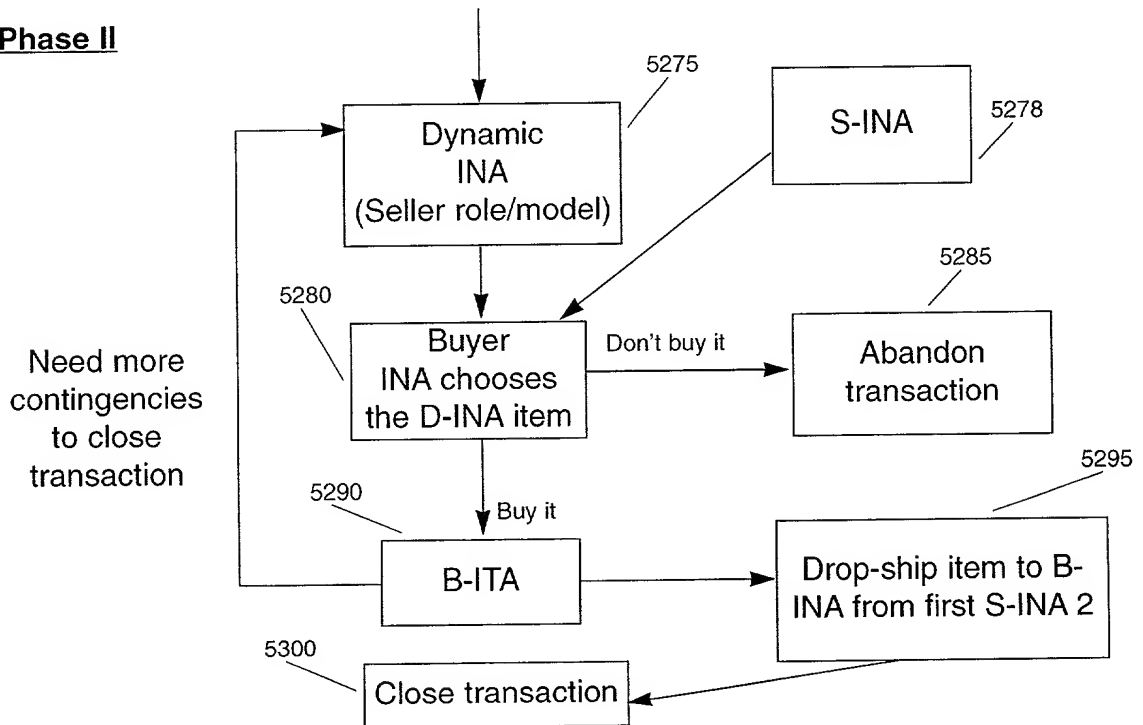


**Fig. 53: Dynamic D-INA 's Double-agents:
Arbitrage Applications**

Phase I



Phase II



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Fig. 54: Traditional Combinatorial Auction with Intermediary: Between Single Seller and Multiple Buyers

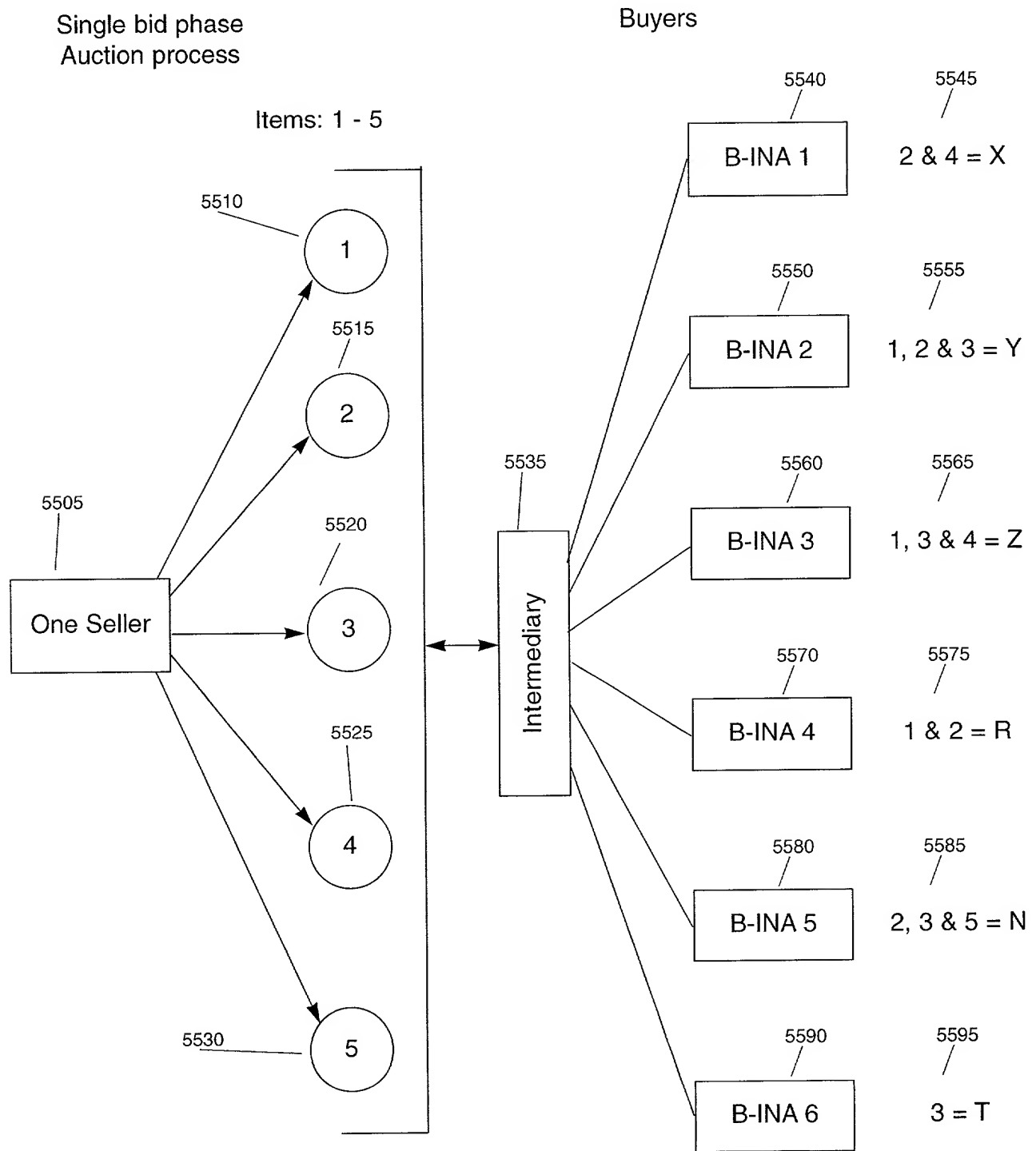
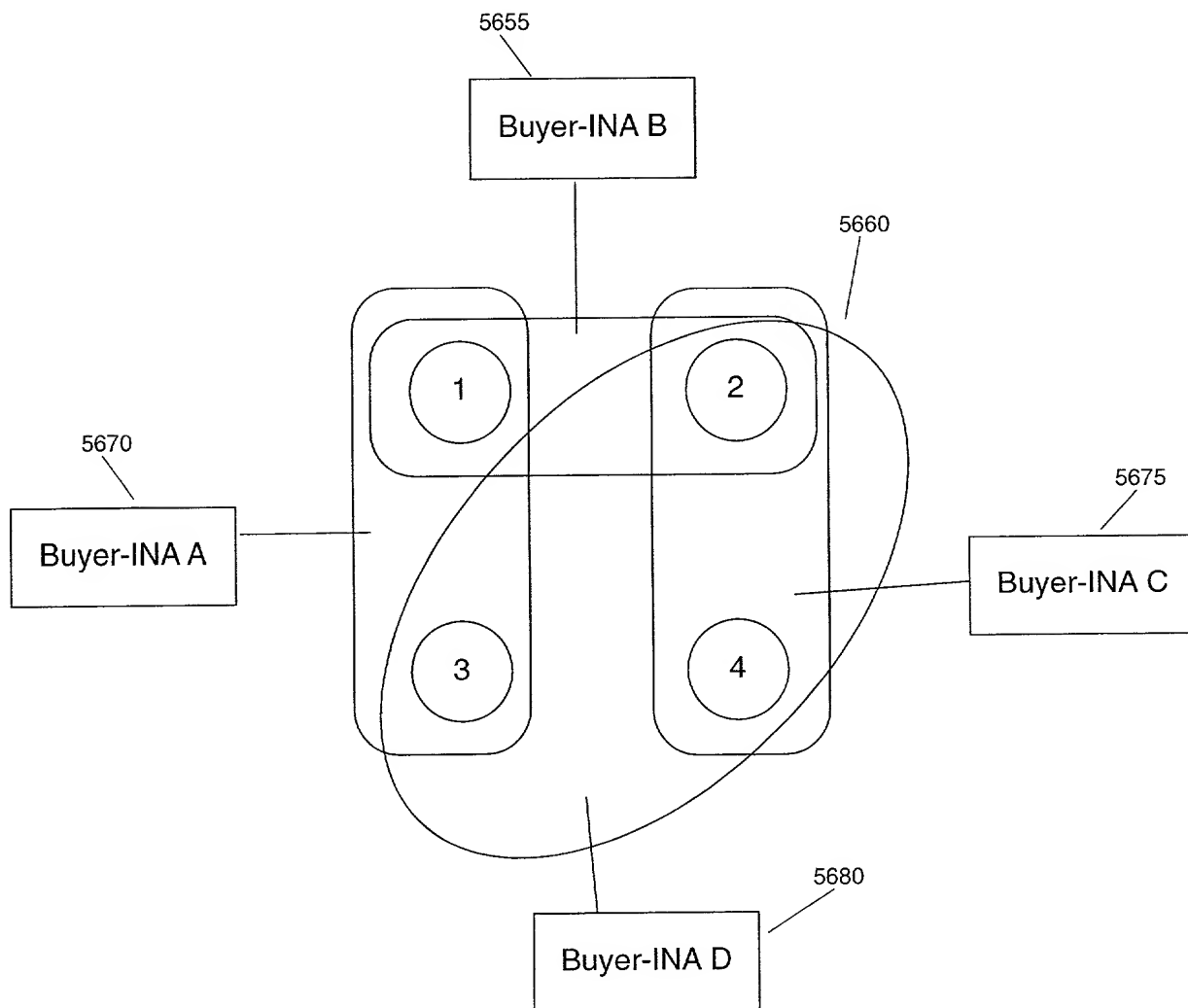


Fig. 55: INA Combinatorial [Double] Auction between Single Seller with Multiple Items and Multiple Buyers



5685
 A = 1 & 3
 B = 1 & 2
 C = 2 & 4
 D = 2, 3 & 4

Fig. 56: Final Session
Winner Determination of Interactive Multi-lateral Auction

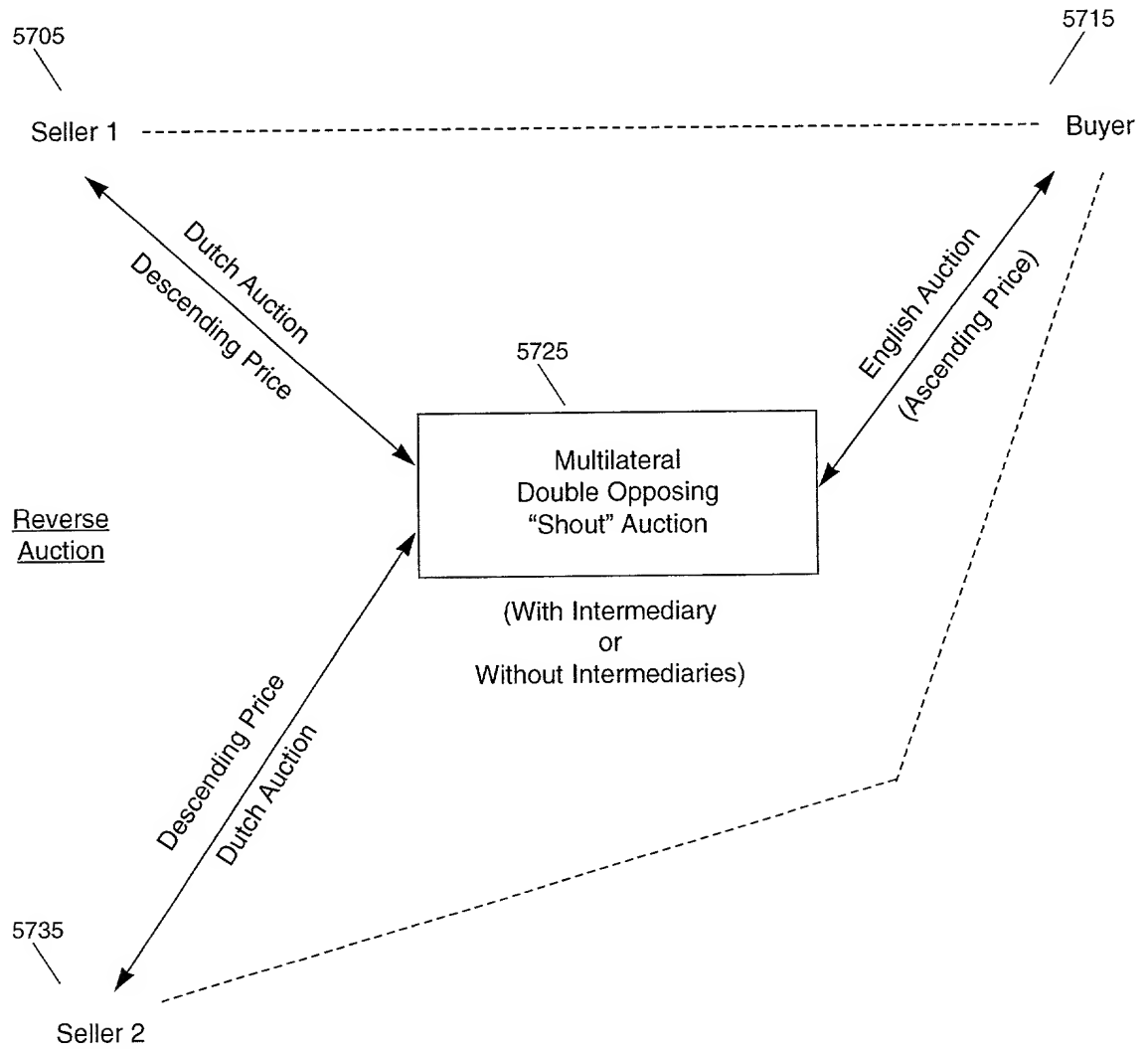


FIG. 56: Final Session

Fig. 57: Factor Filters

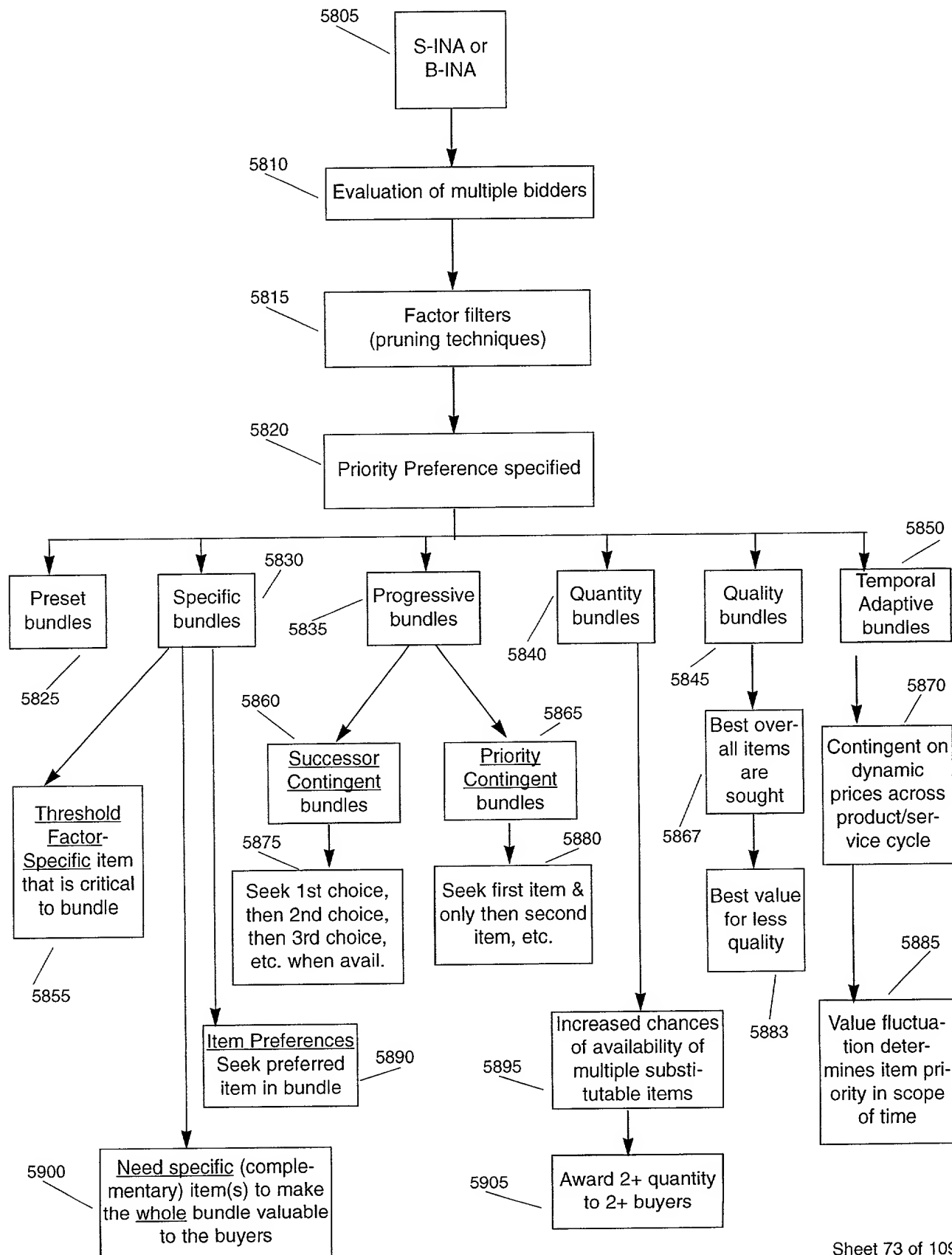


Fig. 58: Disintermediated Multi-item Bidding From One Seller To Multiple Buyers

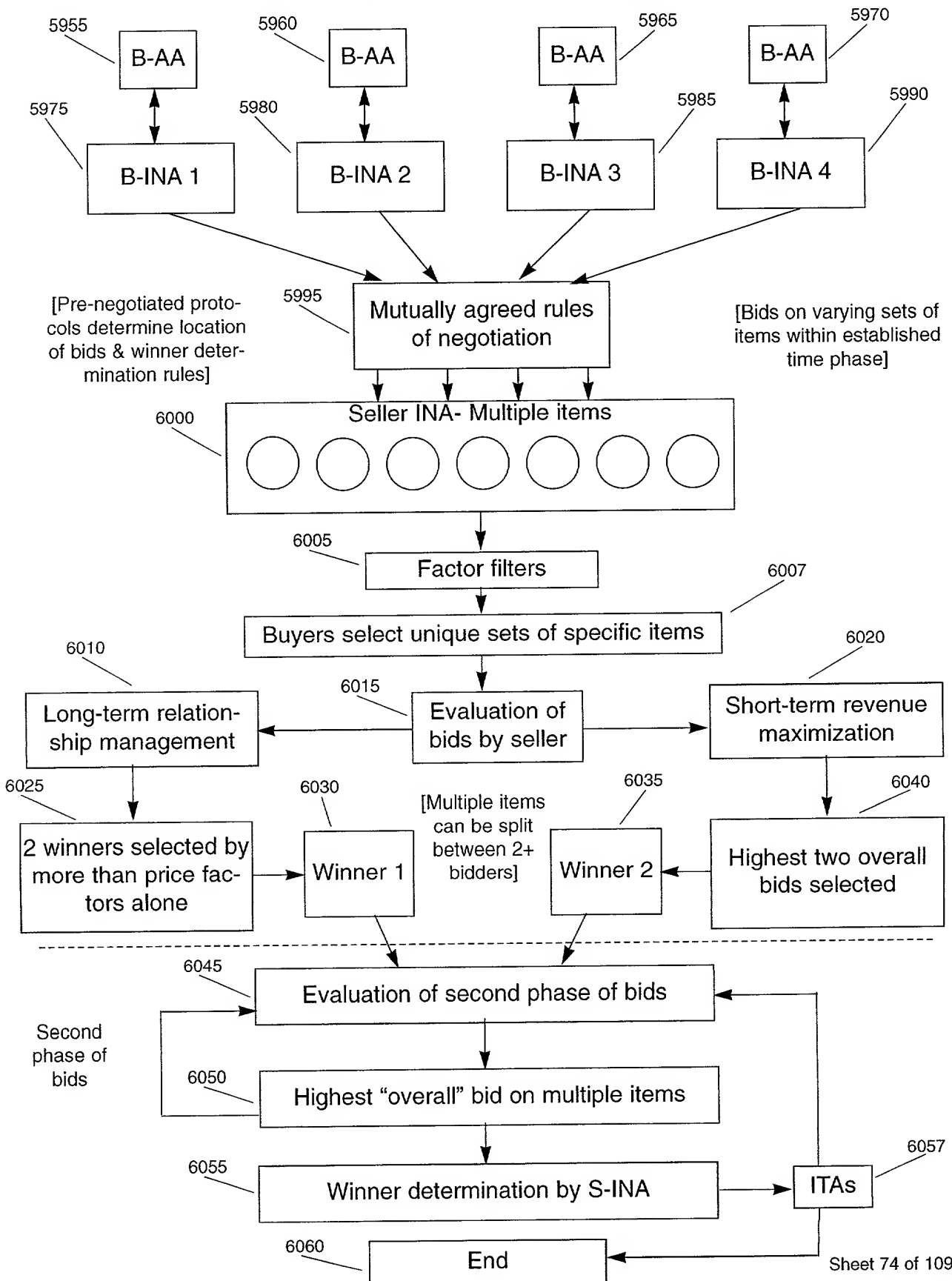
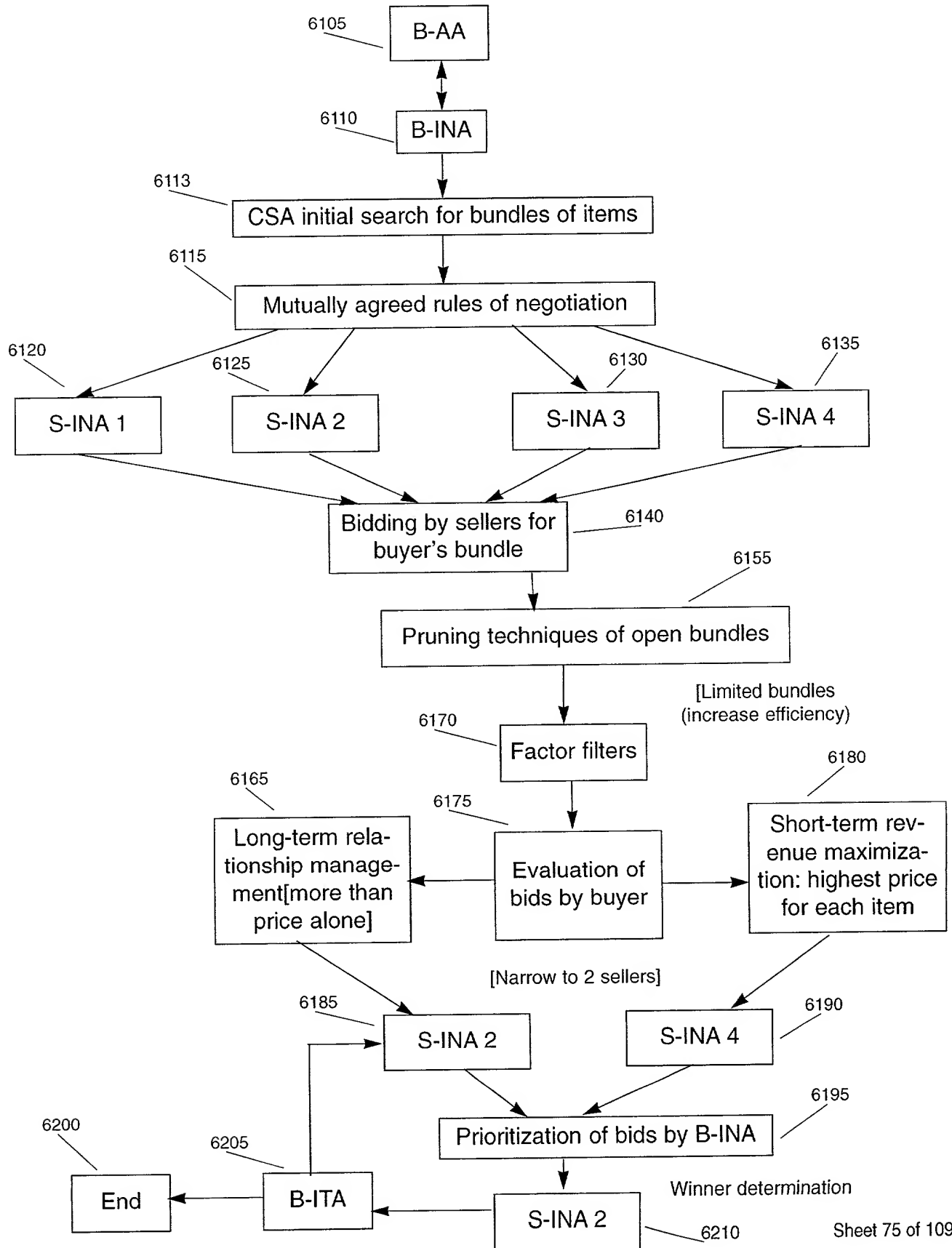


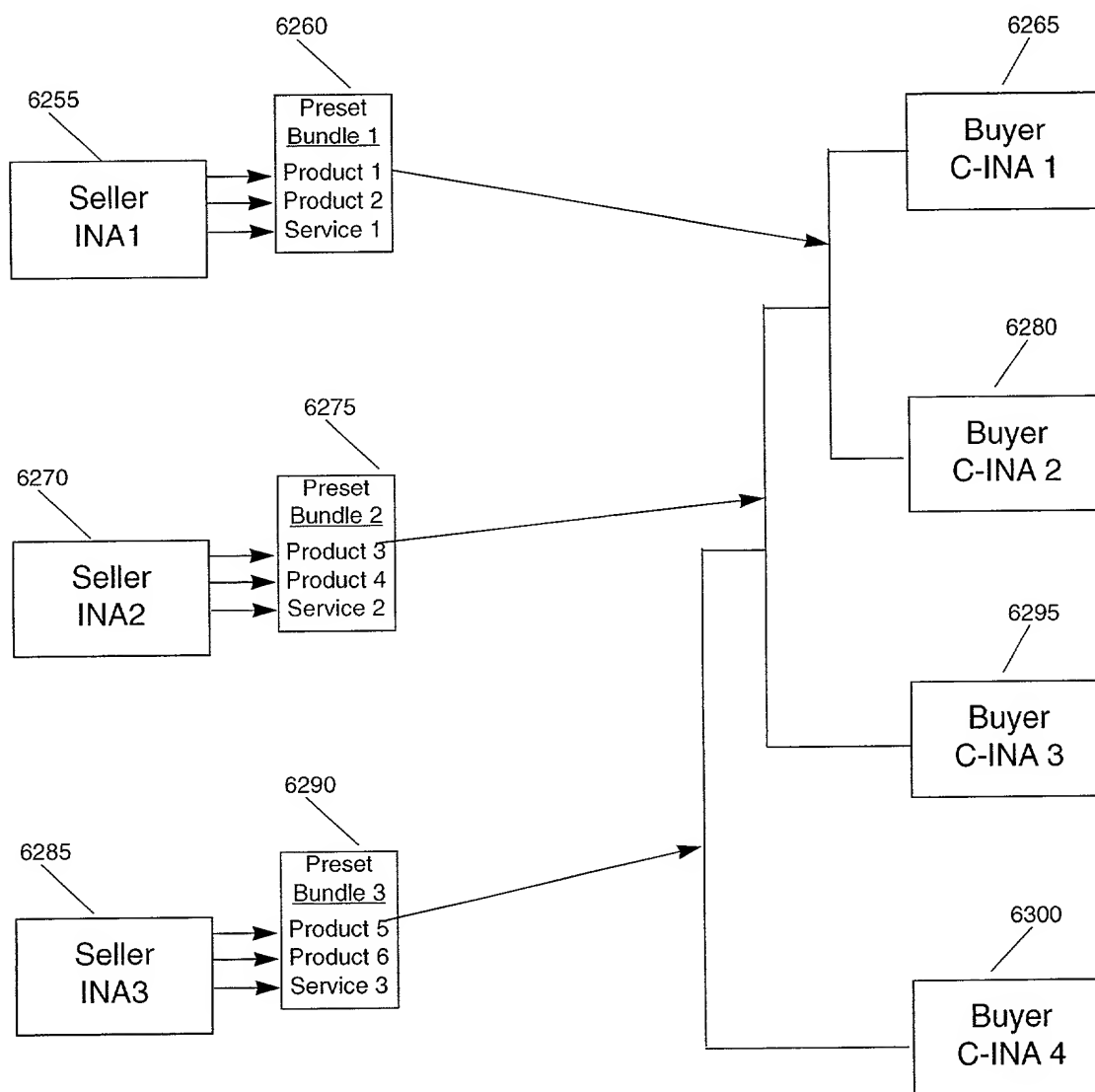
FIG. 58: Disintermediated Multi-item Bidding From One Seller To Multiple Buyers

Fig. 59: Disintermediated Multi-item Bidding between Multiple Sellers and Single Buyer



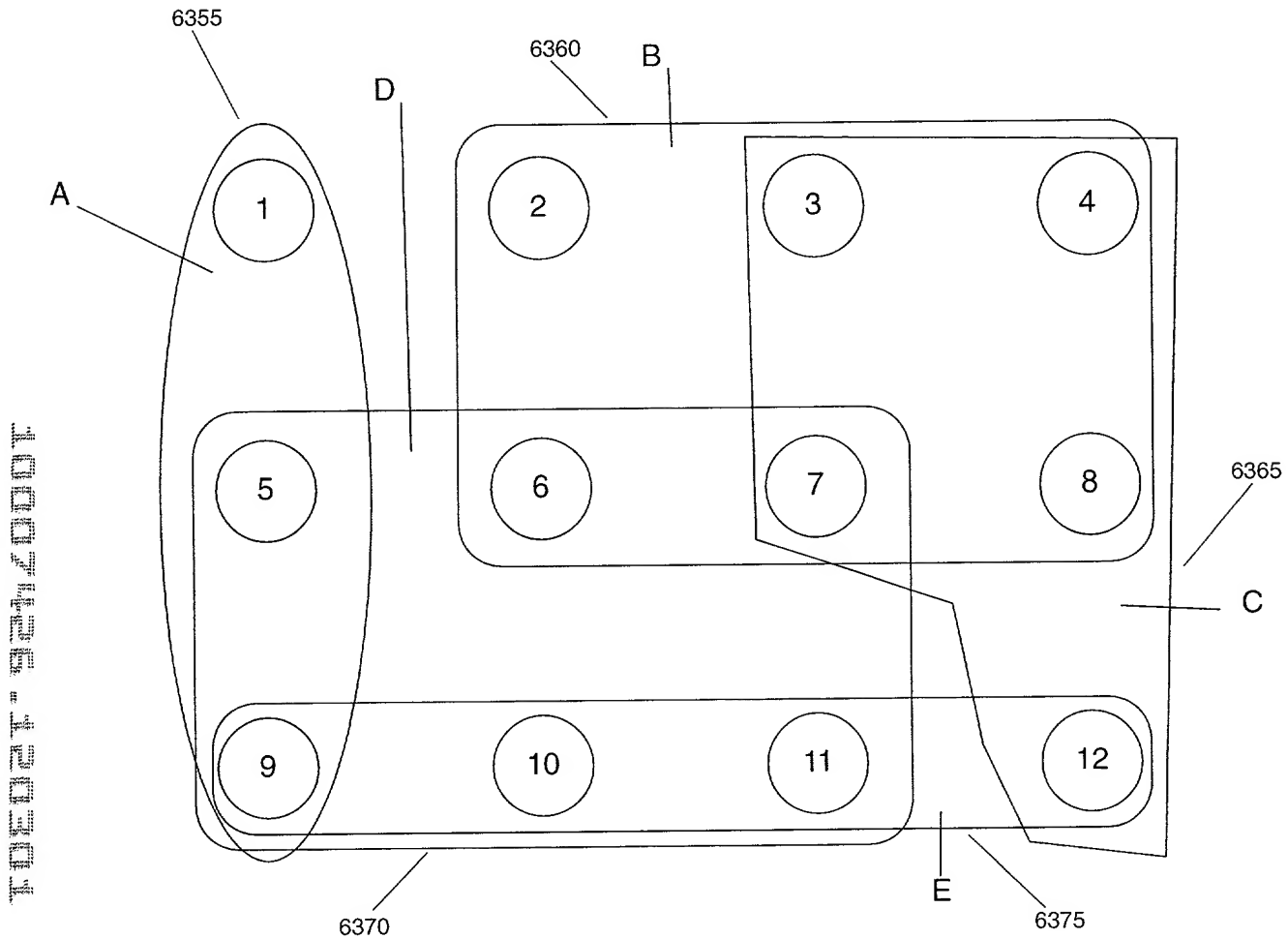
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Fig. 60: Disintermediated Aggregation of Pre-Set Bundles between Multiple Sellers & Multiple Buyers



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Fig. 61: Disintermediated Multi-item Bidding Between Multiple Sellers & Multiple Buyers



1 – 4: Seller I
 5 – 8: Seller II
 9 – 12: Seller III

Buyer Bidder A: 1, 5, 9
 Buyer Bidder B: 2, 3, 4, 6, 7, 8
 Buyer Bidder C: 3, 4, 7, 8, 12
 Buyer Bidder D: 5, 6, 7, 9, 10, 11
 Buyer Bidder E: 9, 10, 11, 12

Fig. 62A: Disintermediated Aggregation Of Multiple-item Bundles Bidding From Multiple Sellers To Multiple Buyers using C-INA 's

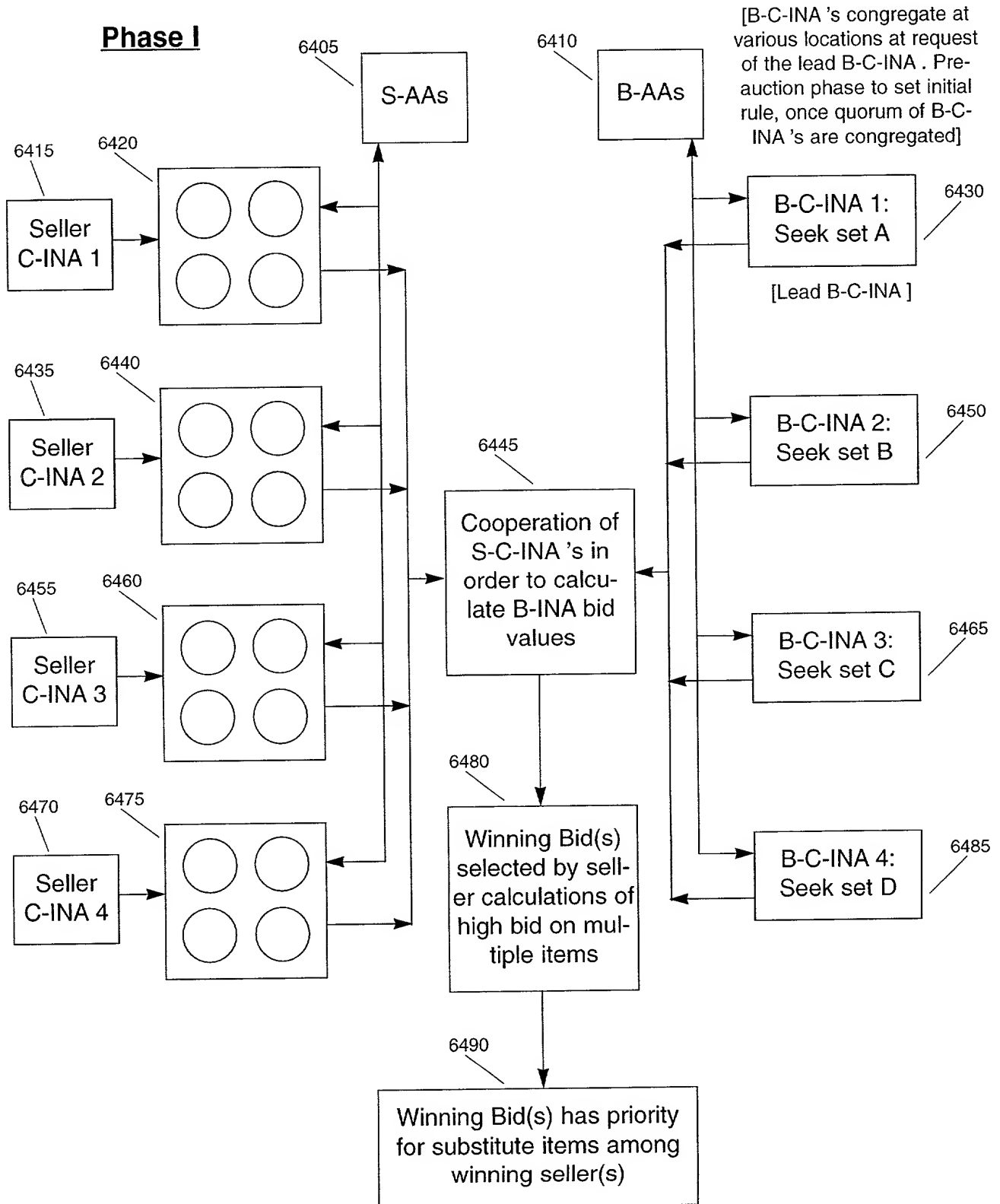


Fig. 62B: Disintermediated Aggregation Of Multiple-item Bundles Bidding From Multiple Sellers To Multiple Buyers using C-INA 's (continued)

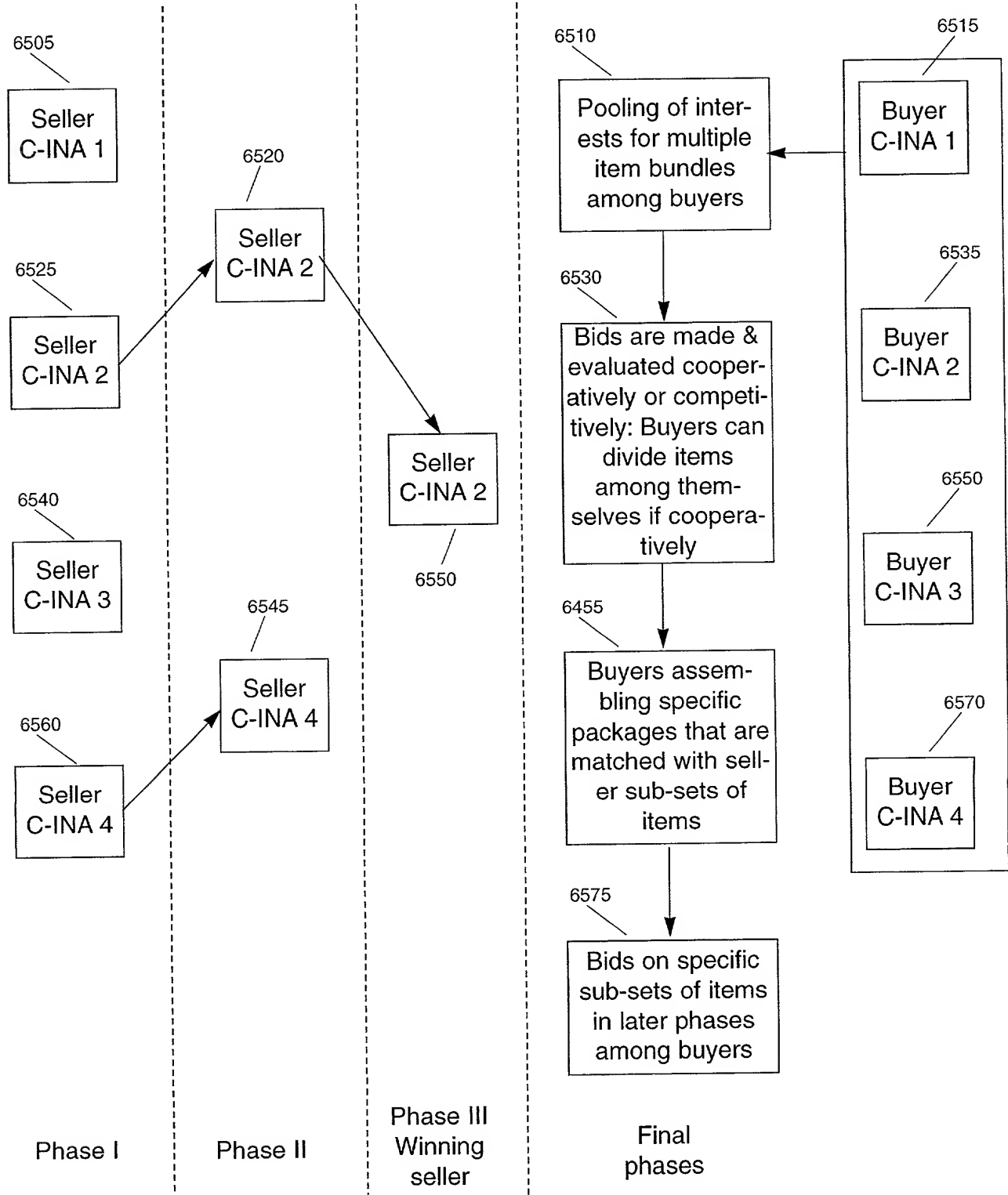


Fig. 63: Disintermediated Arbitrage Of Multi-item Bundles Between Multiple Sellers & Multiple Buyers using D-INA 's

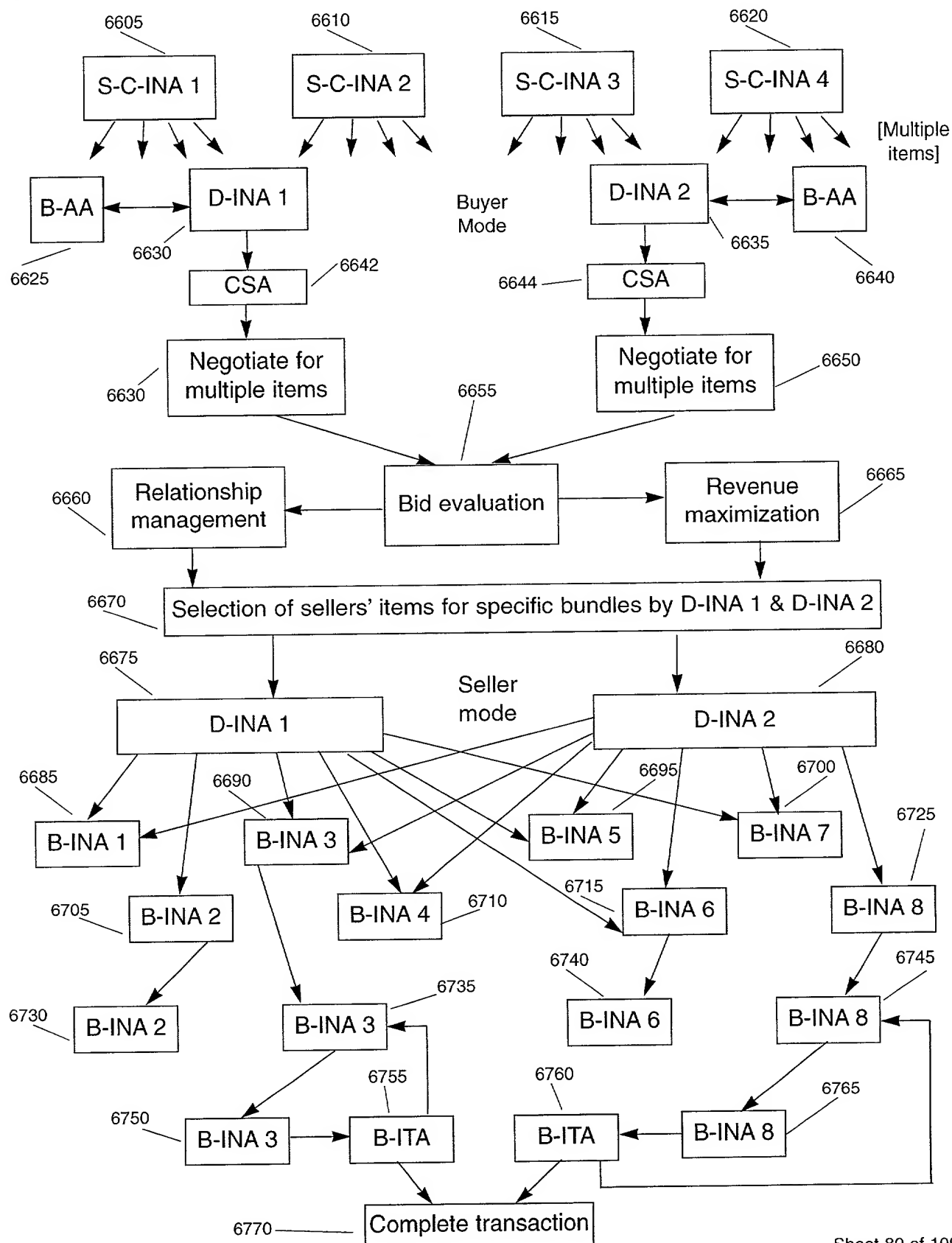


Fig. 64: Multifactorial Bidding Approaches

Sorting By Item Variables

Quality

Attribute – color, style, etc.

Quantity

Availability (now or later)

Delivery Time & Terms

Size

Dynamic Pricing Across product/service cycle

Brand/manufacturer

Configuration

Features

Additional options

Combinations of various features

Price

Payment Method

Payment Terms

Location

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Fig. 65: Example of Multiple Feature Factors: Personal Computer Configurations

Manu.	CPU/ Mother board	Brand	OS	RAM	HDD	Modem & ISP contract.	DVD	Monitor	Price
Intel	500-ABC	IBM	MS	64	10	56 kbs	DVD	15 in	
Intel	500-ABC	Dell	MS	128	10	56 kbs	DVD	17 in	
AMD	500-XYZ	Gateway	MS	128	20	56/ISP	DVD	19 in	
AMD	800-XYZ	HP	MS	128	0	56/ISP	DVD	17 in	
AMD	800-ABC	IBM	MS	256	20	56/ISP	DVD	17 in	
AMD	800-ABC	Dell	Linux	256	20	128	DVD-RAM	17 in	
Intel	800-ABC	Gateway	Linux	256	30	128	DVD-RAM	17 in	
Intel	800-ABC	HP	Linux	256	30	128	DVD-RAM	17 in	
Intel	1.2-XYZ	IBM	Linux	256	30	128/ISP	DVD-RAM	17 in	
Intel	1.2-XYZ	Dell	Linux	256	40	128/ISP	DVD-RAM	17 in	
Intel	1.2-ABC	Gateway	MS	256	40	128/ISP	DVD-RAM	19 in	
Intel	1.2-ABC	HP	MS	256	40	256	DVD-RAM	19 in	
AMD	1.2-ABC	IBM	MS	256	40	256	DVD-RAM	19 in	
AMD	1.2-ABC	Dell	MS	512	60	256	DVD	19 in	
AMD	1.2-XYZ	Gateway	MS	512	60	256/ISP	DVD	19 in	
AMD	1.8-XYZ	HP	MS	256	60	256/ISP	DVD	19 in	
AMD	1.8-XYZ	IBM	Linux	256	60	1.2mbs	DVD-RAM	21 in	
Intel	1.8-XYZ	Dell	Linux	256	80	1.2mbs	DVD-RAM	21 in	
Intel	1.8-XYZ	Gateway	Linux	512	80	1.2mbs	DVD-RAM	21 in	
Intel	2.4-ABC	HP	Linux	512	80	1.2/ISP	DVD-RAM	21 in	
Intel	2.4-ABC	Sony	MS	512	120	1.2/ISP	DVD	21 in	
AMD	2.4-ABC	Sony	MS	1.2	120	1.2/ISP	DVD	21 in	

Quantity – Discounts – 2-5, 5-9, 11-19, 21-29, 30-99, 100-499, 500-1999, etc.

Fig. 66: Examples of Categories of Multi-item Bundles

1. Computer Hardware configurations – RAM, HDD, CPU, monitor
2. Computer Hardware& Software
3. Computer Hardware & Services
4. Office equipment computer, printer, copier, fax, phone
5. Telephone equipment & services – local and long distance
6. Telecom capacity – rev. maximization across demand cycle
7. Electronic equipment – A/V combinations & software accessories
8. Photo equipment – camera, lenses, accessories, film, digital media
9. Airline tickets – time constraints to sell multiple seats to maximize revenue
10. Machines, machine parts, machine accessories
11. Cars/trucks & accessories
12. Wardrobe combinations, pants, shirts, coats
13. Real Estate – contiguous properties
14. Communications spectrum – contiguous properties
15. Gems
16. Railroad & trucking scheduling
17. Art, antiques, rugs, etc.
18. Housing combinations
19. Intellectual Property combinations
20. Pharmaceuticals
21. Chemicals

Fig. 67: S-ITA System Architecture

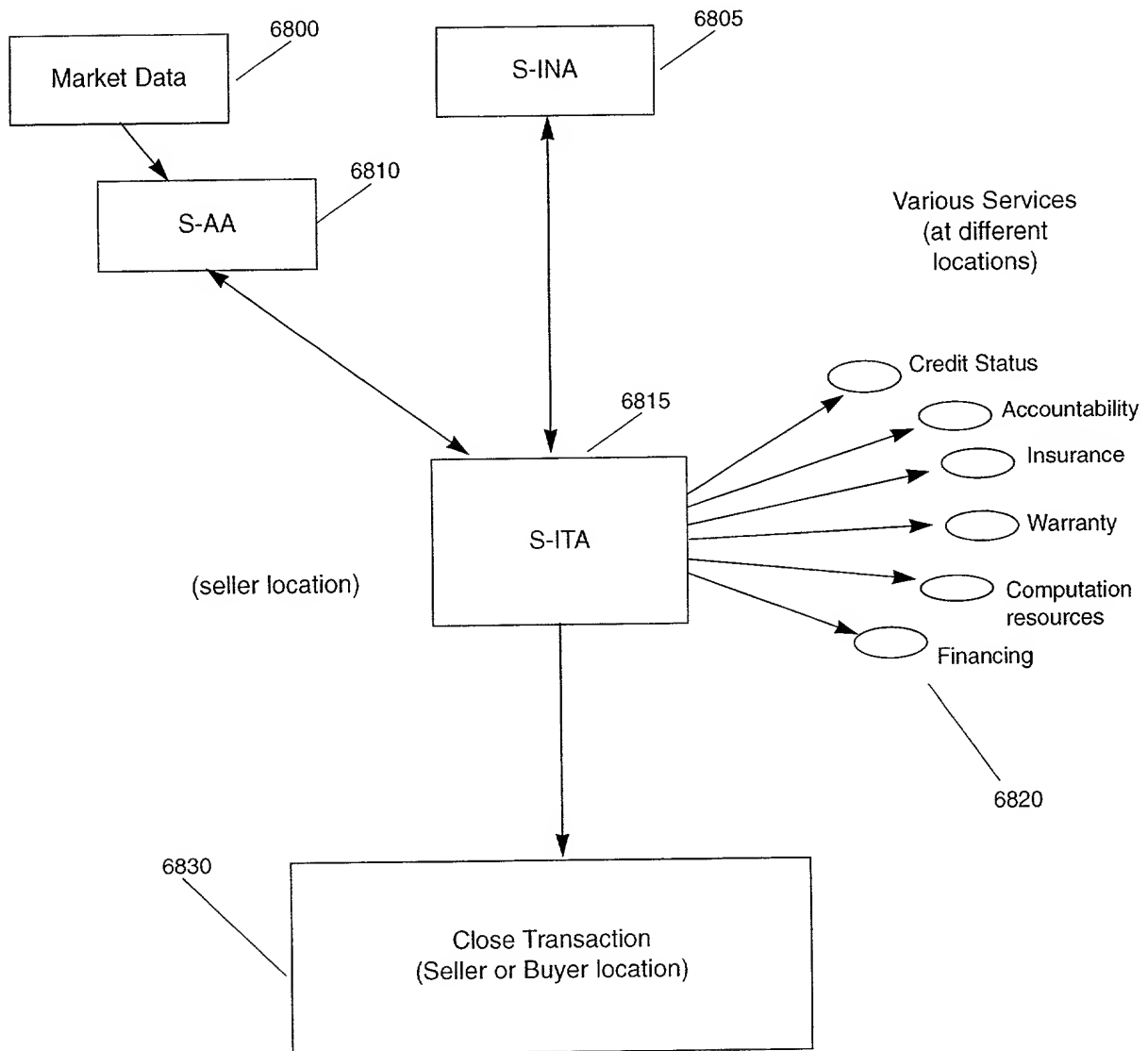
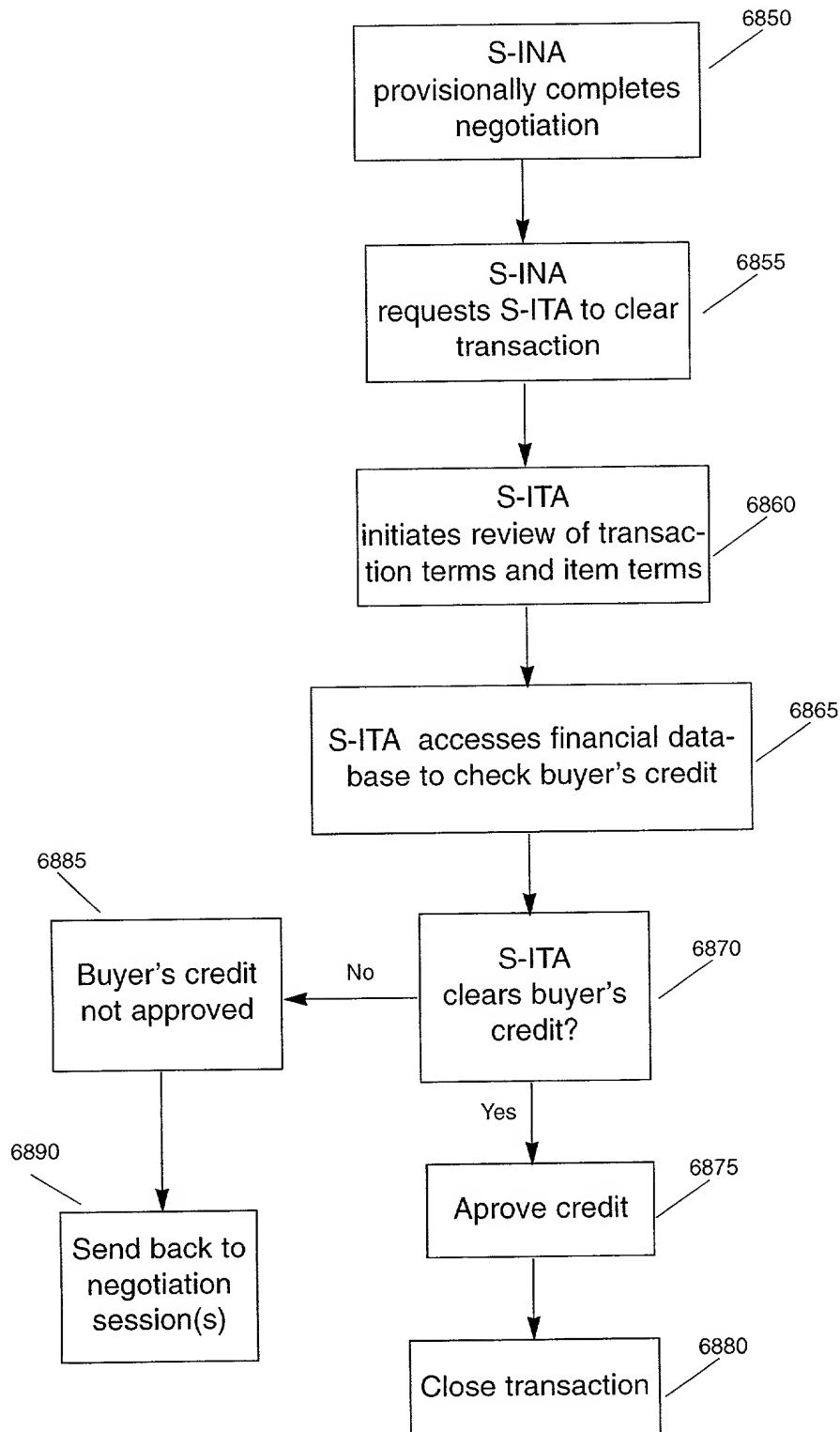


Fig. 68: S-ITA Operation



**Fig. 69: S-ITA and B-ITA System Process
in Final Negotiation with One Seller**

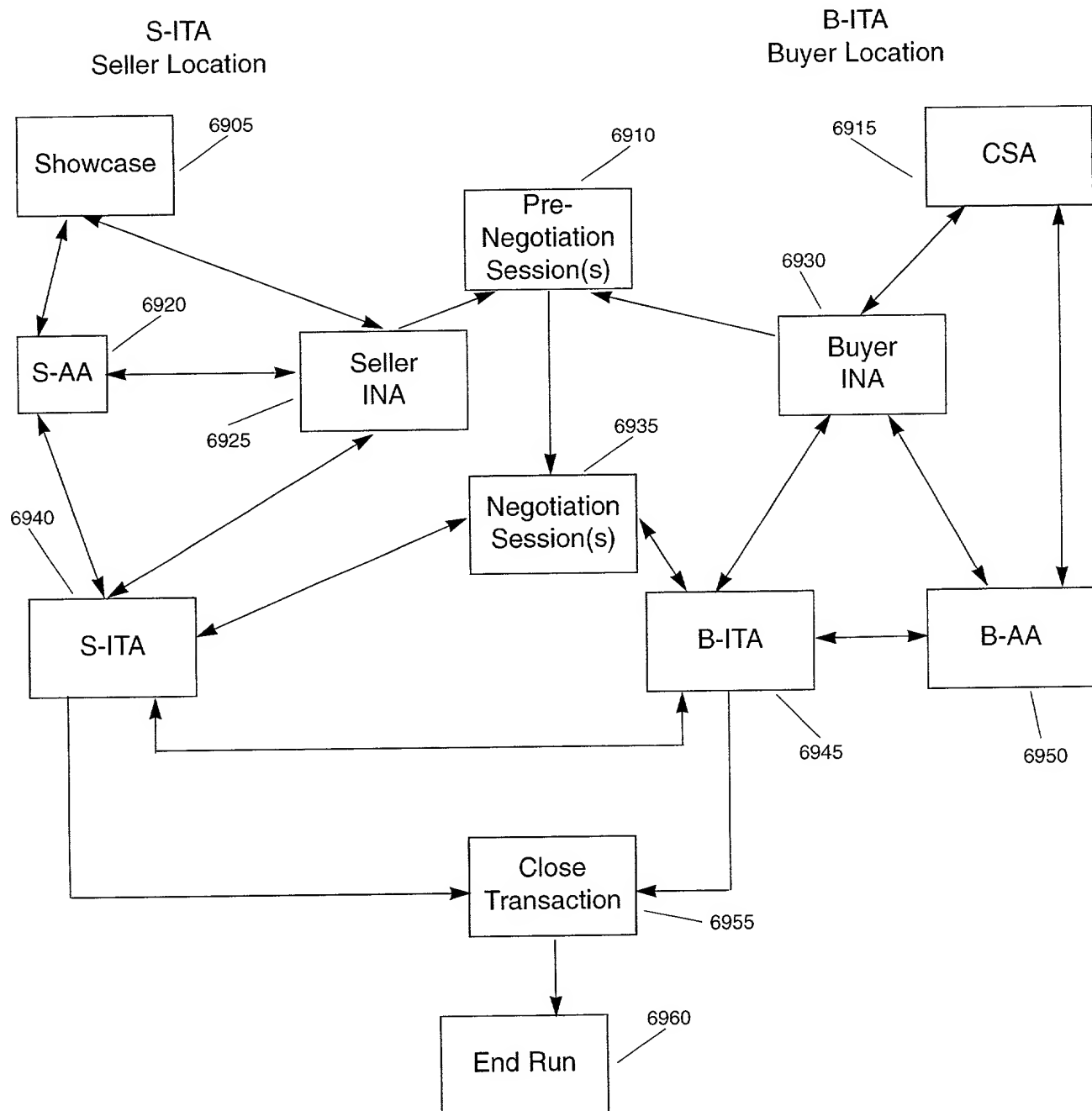


Fig. 70: ITA Service Categories: Buyer & Seller Roles

<u>s – ITA Services</u>	<u>b – ITA Services</u>	<u>dual – ITA Services</u>
<u>Info.</u>	<u>Info.</u>	<u>Info.</u>
<u>AA functions</u>	<u>AA functions</u>	
Superscore	Info about market, companies.,	
Accountability	economy, industry,	
Credit info.	products, etc.	
<u>Services</u>	<u>Services</u>	<u>Services</u>
Compliance – legal	Promotion discounts	Compliance – legal
Compliance – tax	Warranty	Compliance – tax
RMO's	Insurance	RMO's
finance/credit		finance/credit
payment processing		payment processing
Fulfillment – shipping/tracking		Fulfillment – shipping/tracking
due diligence		due diligence
escrow		escrow
report generator		report generator
post-sale feedback		post-sale feedback

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Fig. 71: ITA Services

Accountability index  prior experience online
credit score & credit check

Financial credit module

— matching buyer with appropriate lender

Contracting module

Compliance module

Legal compliance

Federal/state/international rules

Tax compliance

International customs compliance

Risk management options

Payment processing module

— method of payments

— billing/invoice

— financial clearing and account crediting

Shipping/ delivery terms/tracking

Warranty Info & conditions

Insurance risks

Bookkeeping & accounting function

Due diligence

Escrow process

Report generator

Accelerated processing for high rated customer

Post sale feedback

Fig. 72: B-INA Micro-agents with Mobility

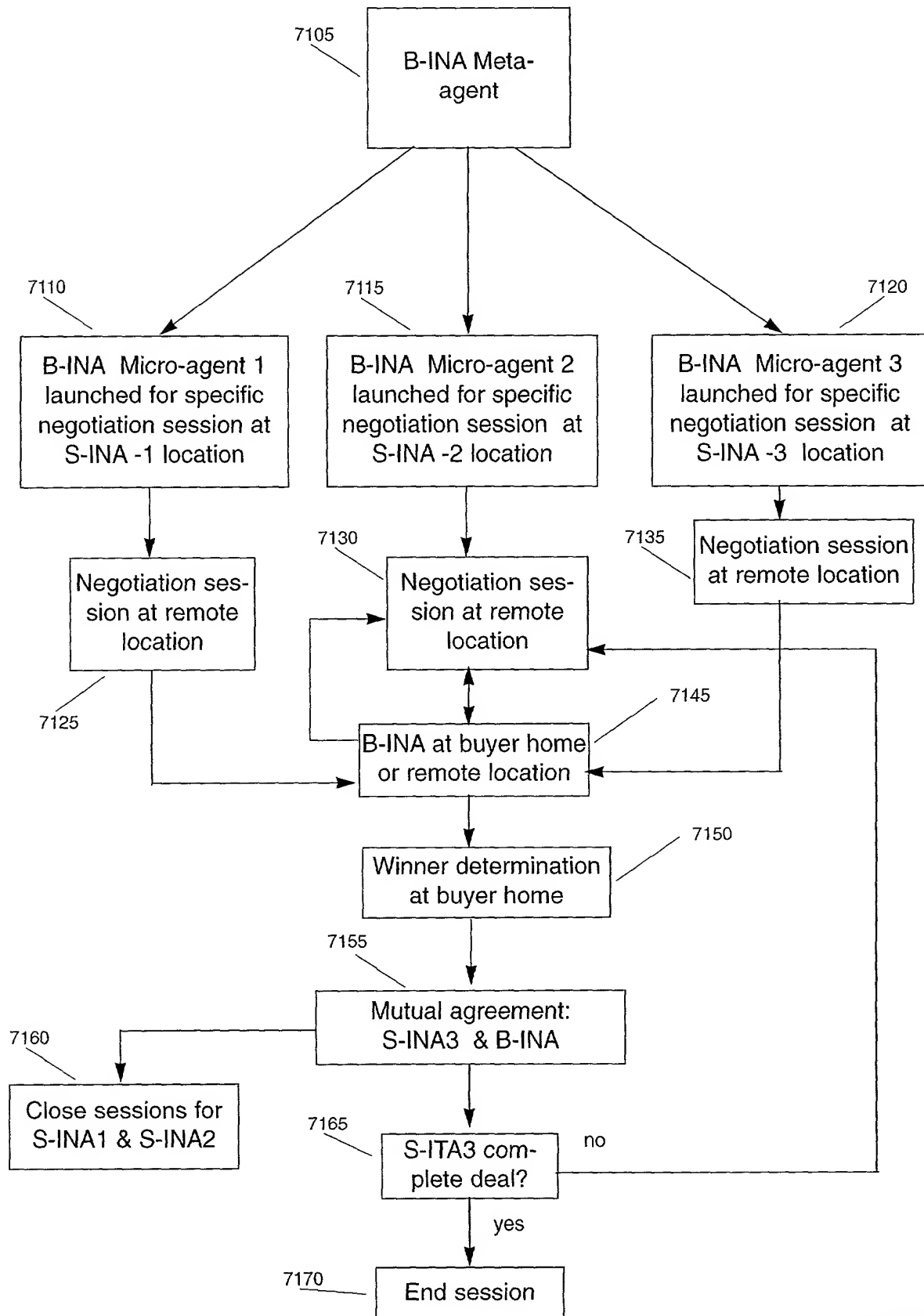


FIG. 72: B-INA Micro-agents with Mobility

Fig. 73: Genetic Algorithms Applied to Multi-Agent System

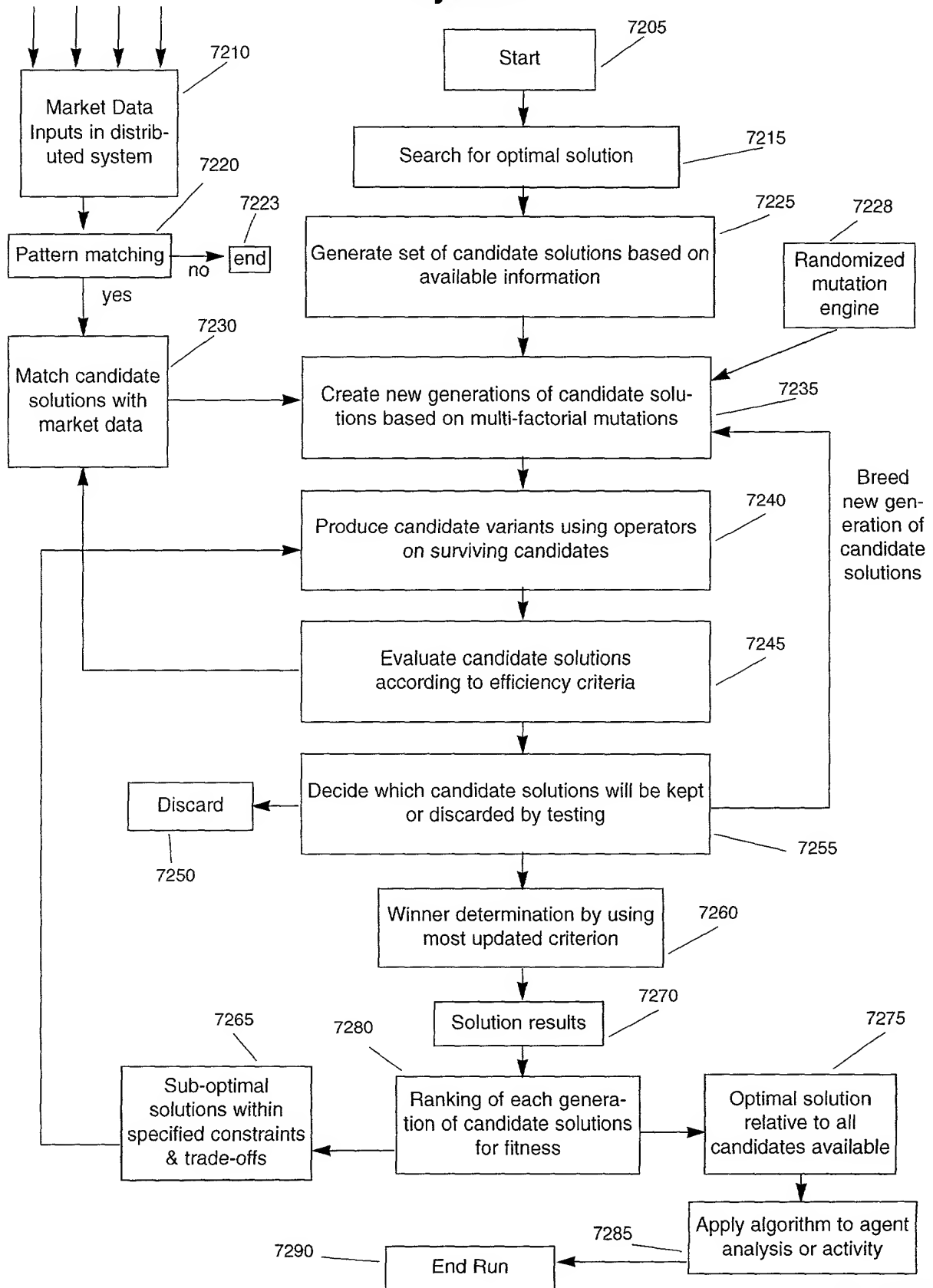


Fig. 74: Neural Networks Applied to Multi-Agent System

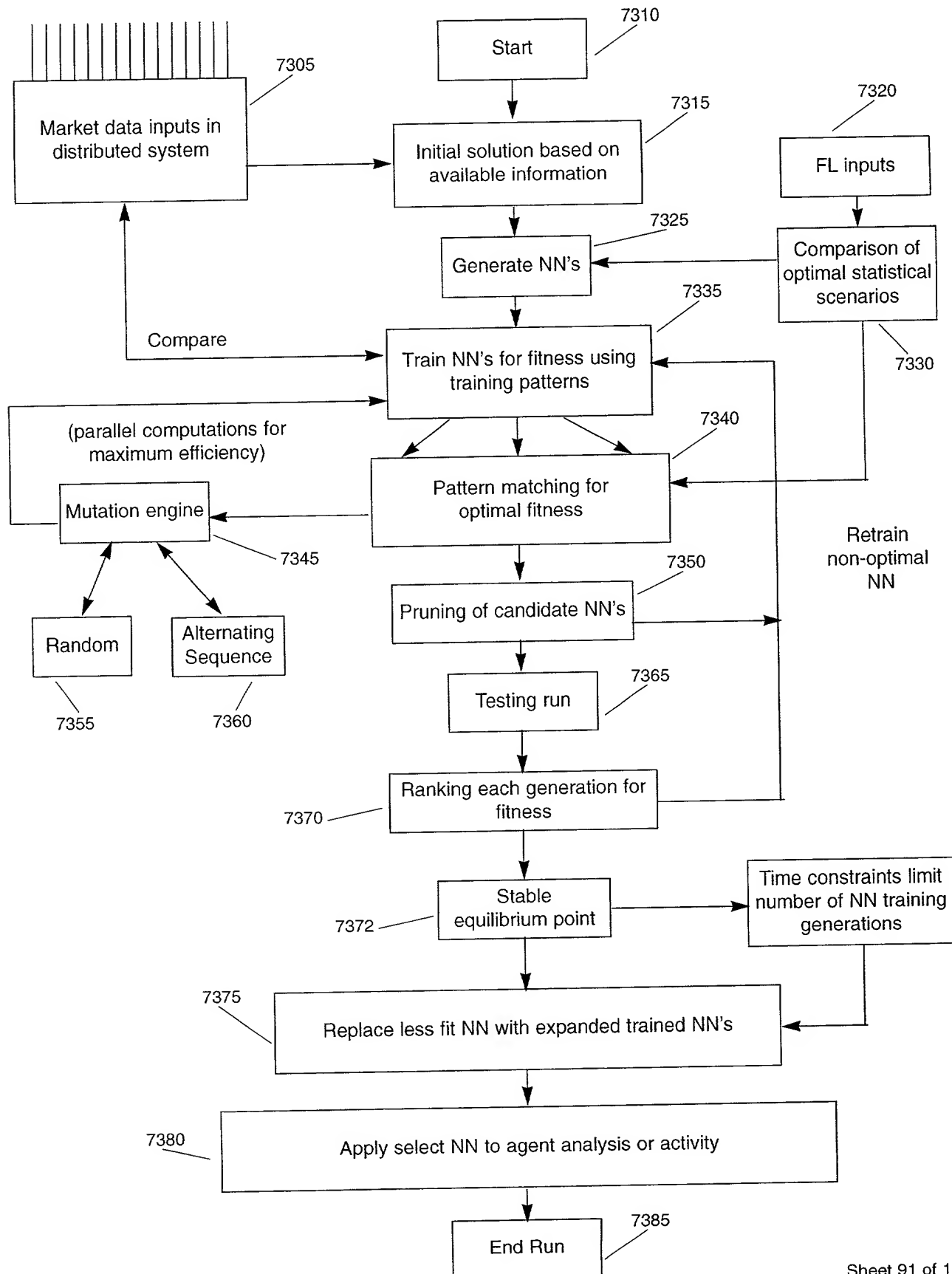
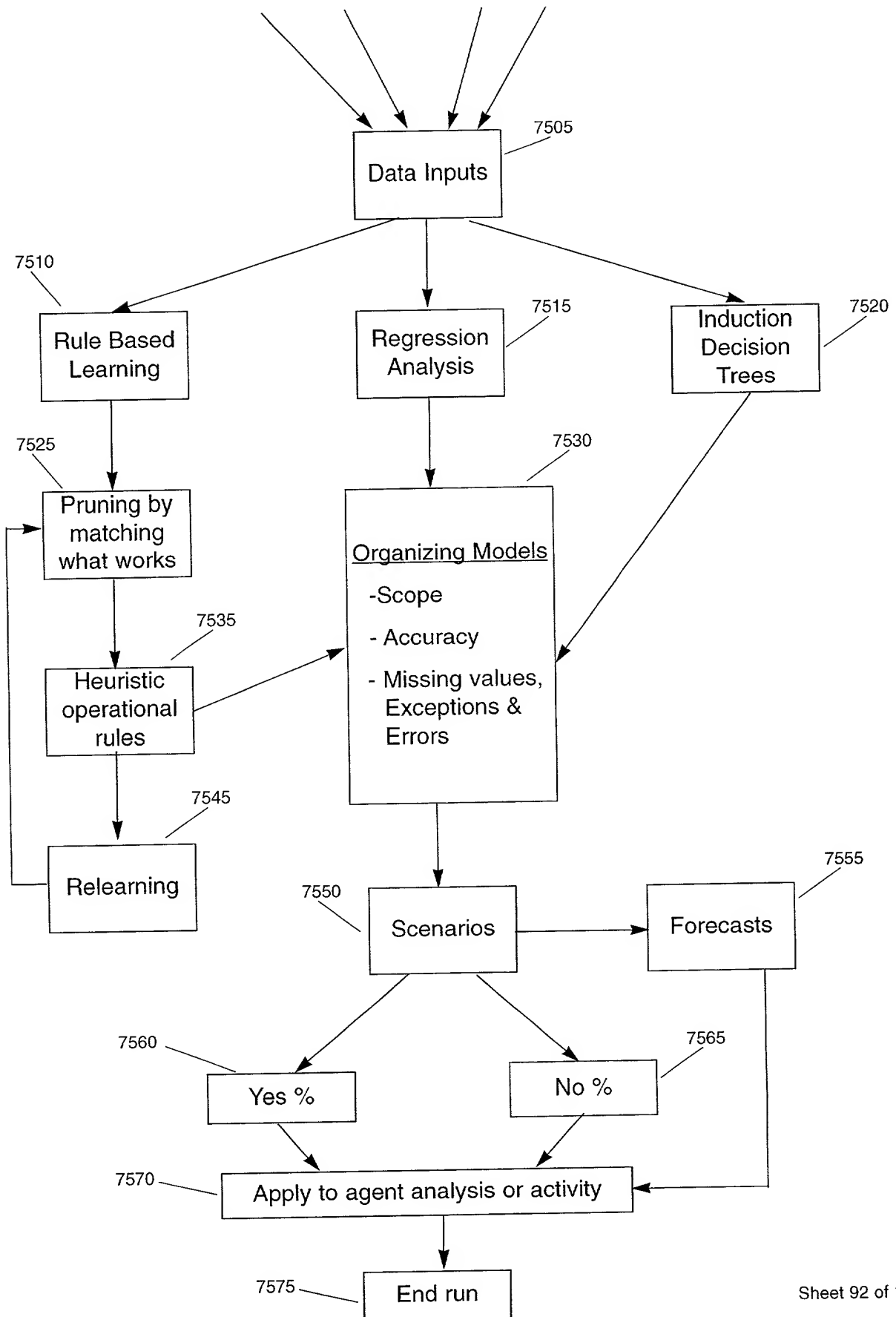
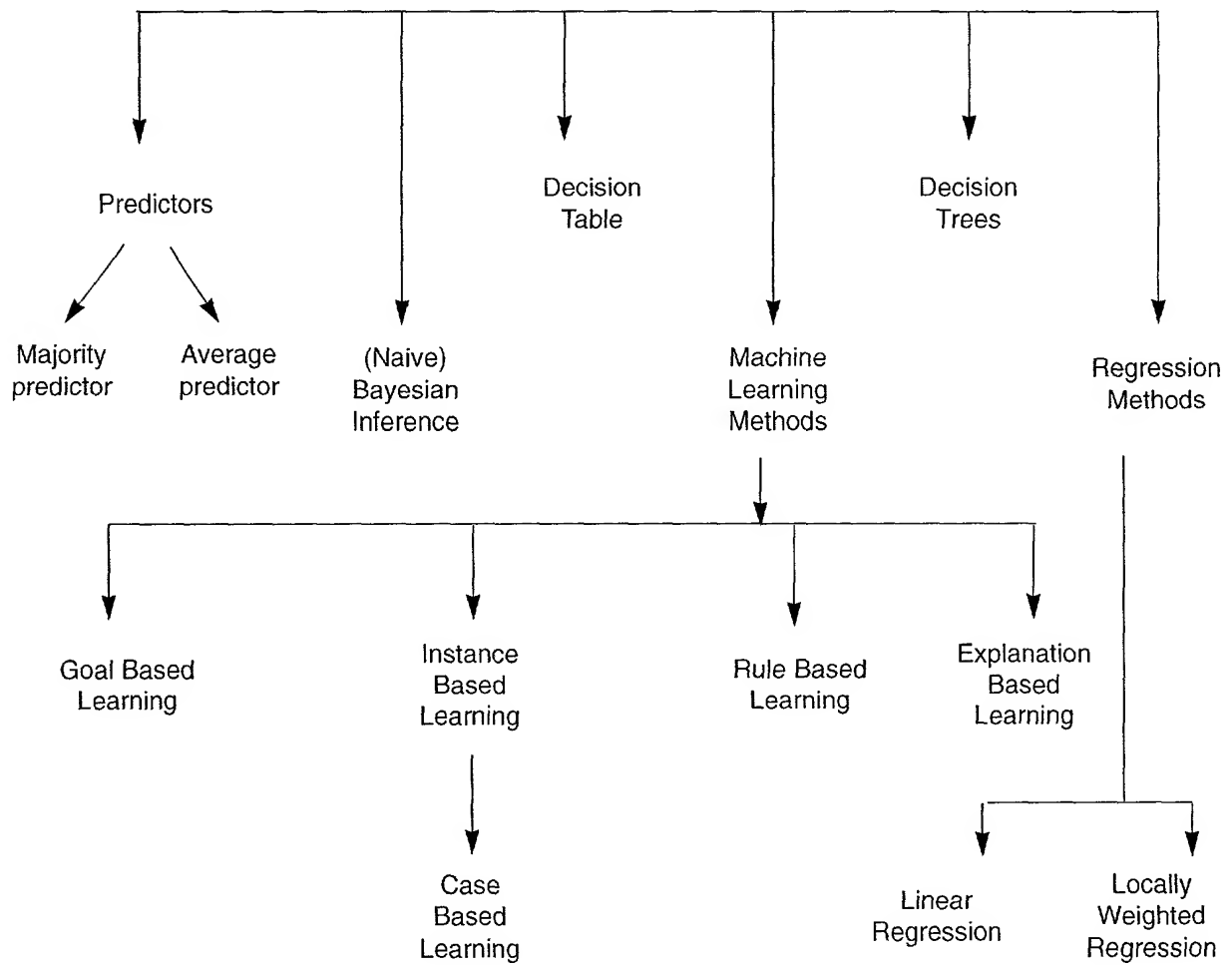


Fig. 75: Genetic Programming System Process



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Fig. 76: Genetic Programming Learning Schemas



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Fig. 77: Evolutionary Computation Applications to Agents

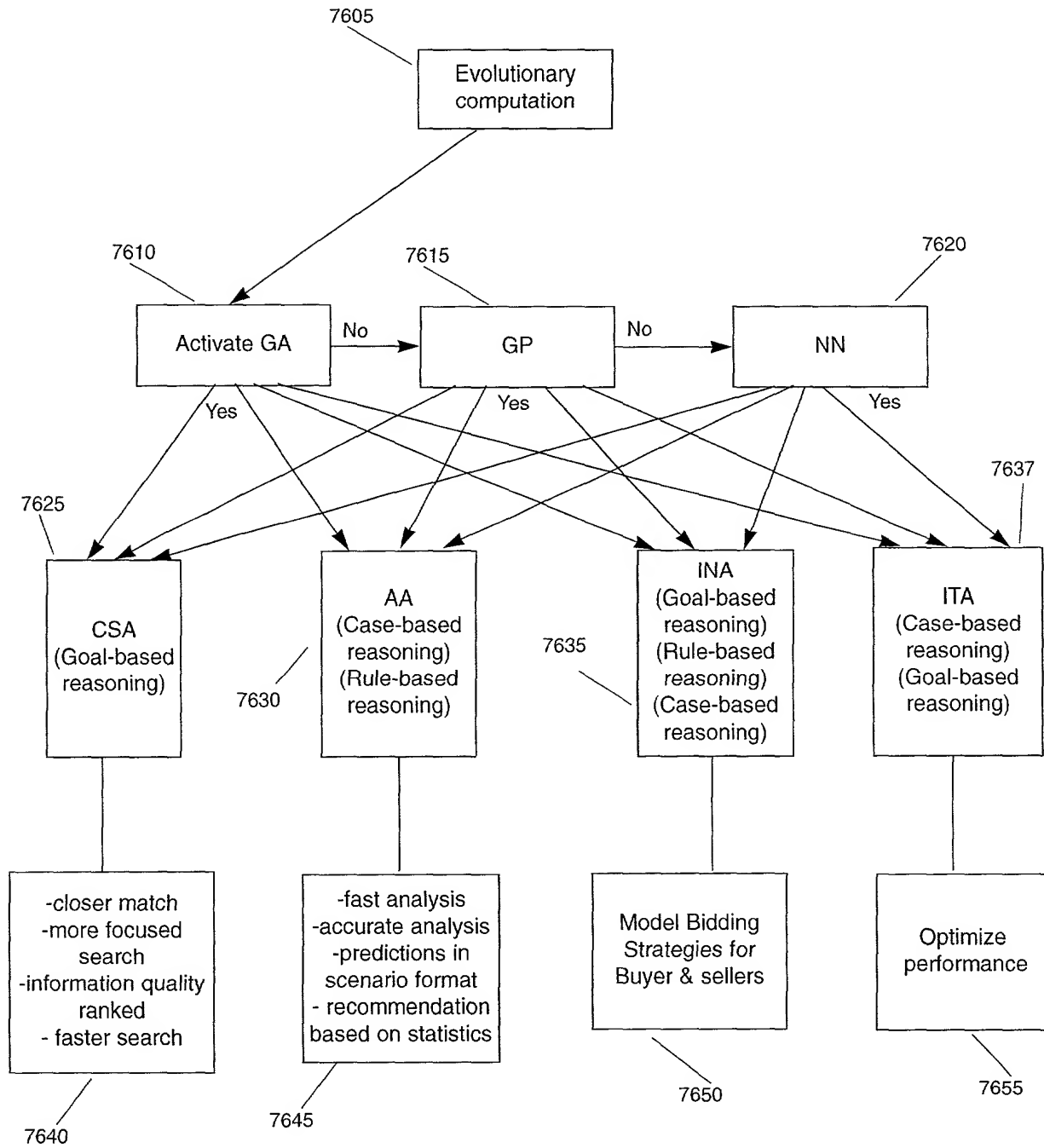
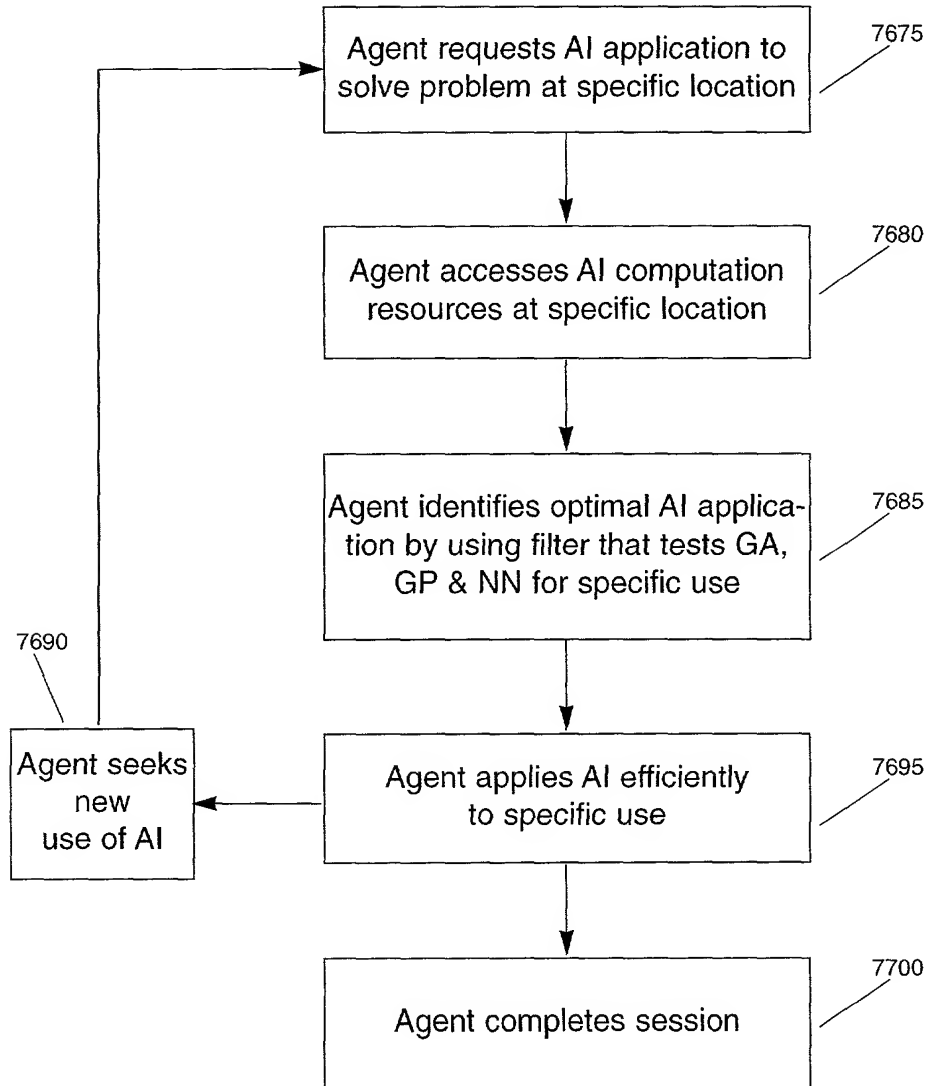


Fig. 78: AI Applied to Agency in a Distributed System



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Fig. 79: Evolutionary Computation Architecture and AA/INA Applications

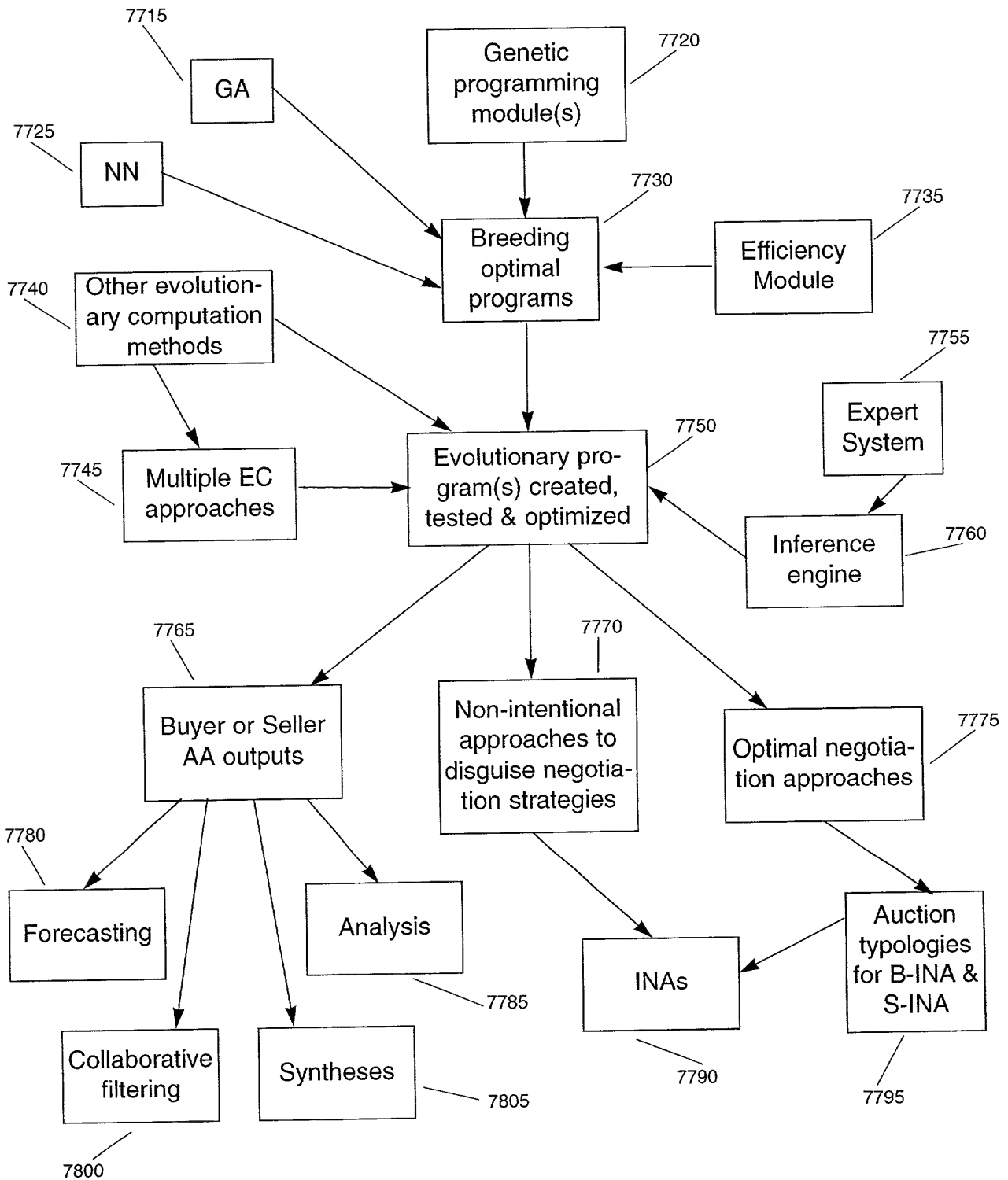


Fig. 80: Layered AI For Optimum Agent Mobility

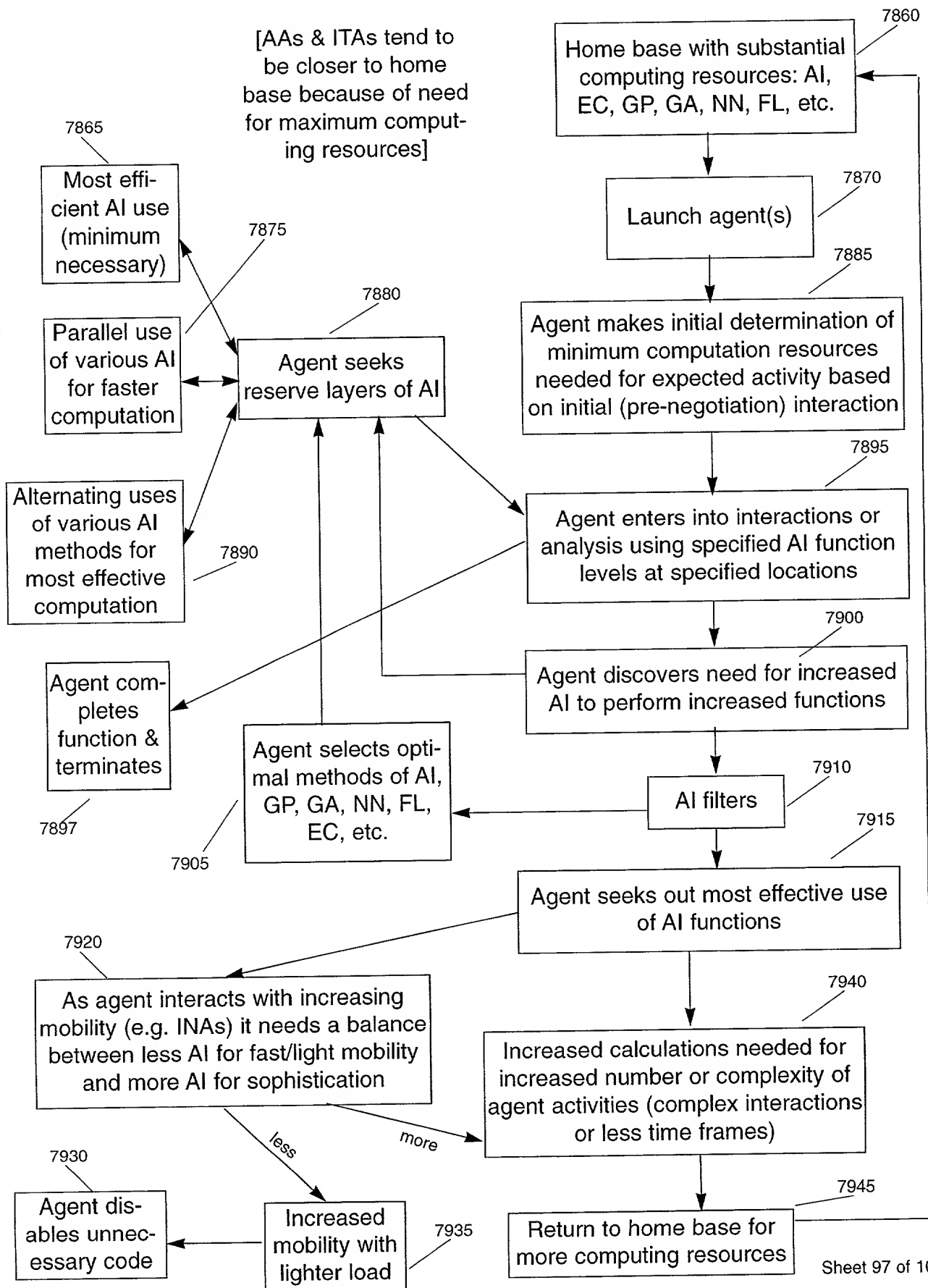


Fig. 81: Analytical Agent System Architecture
Buyer vs. seller viewpoints

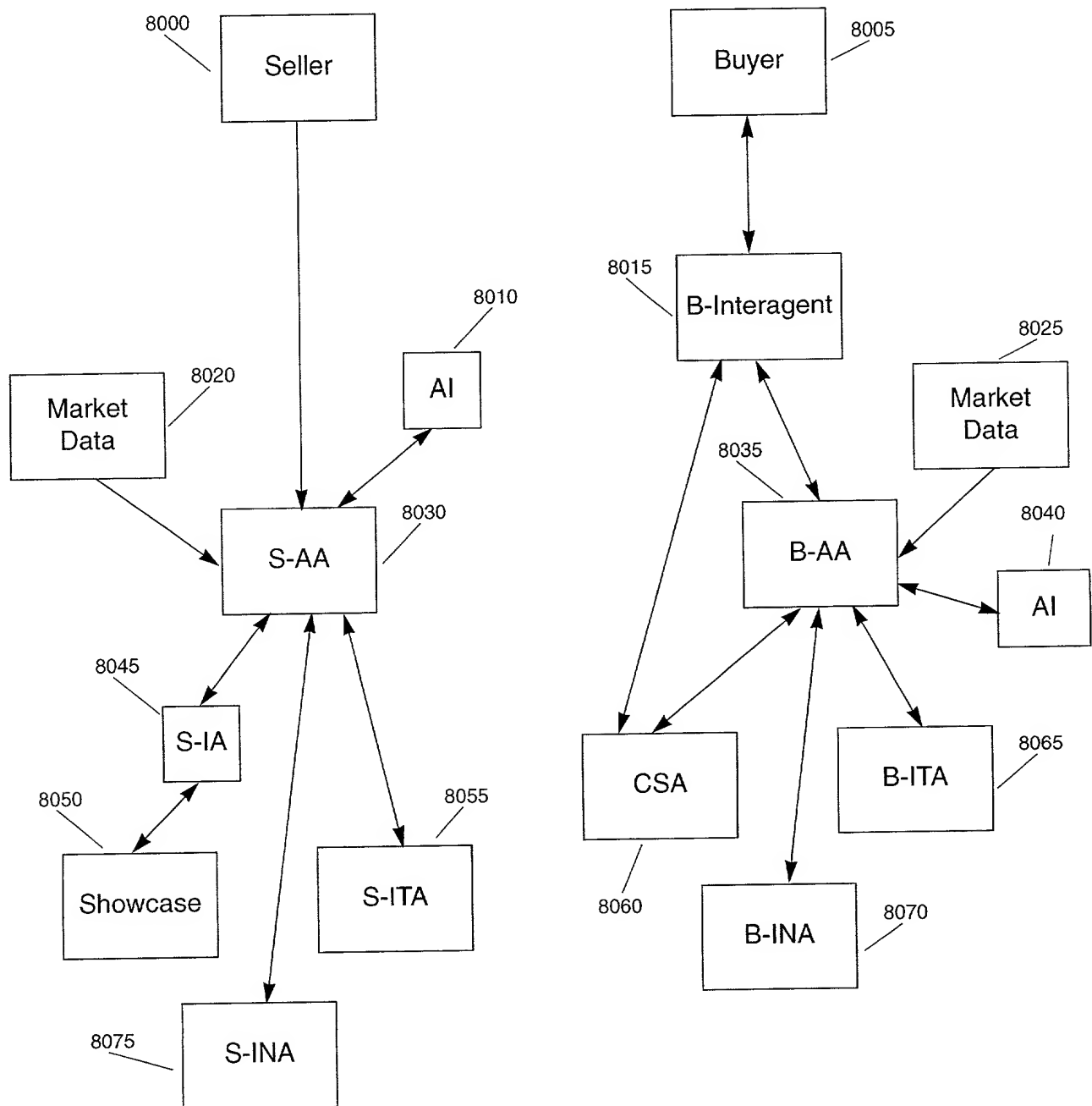


Fig. 82: Kinds Of Data Analysis & Syntheses

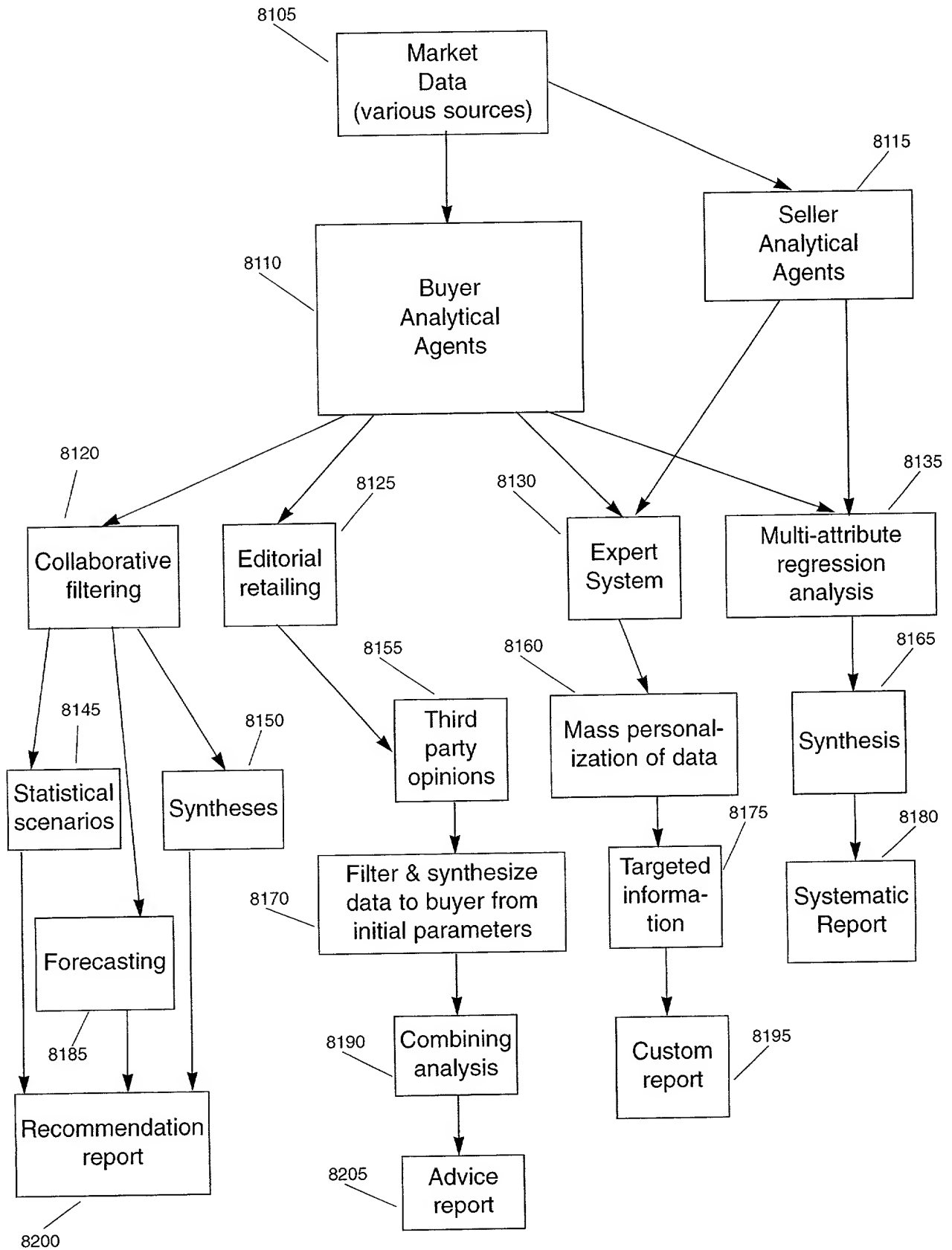


Fig. 83: Analytical Agent Data Flow Process

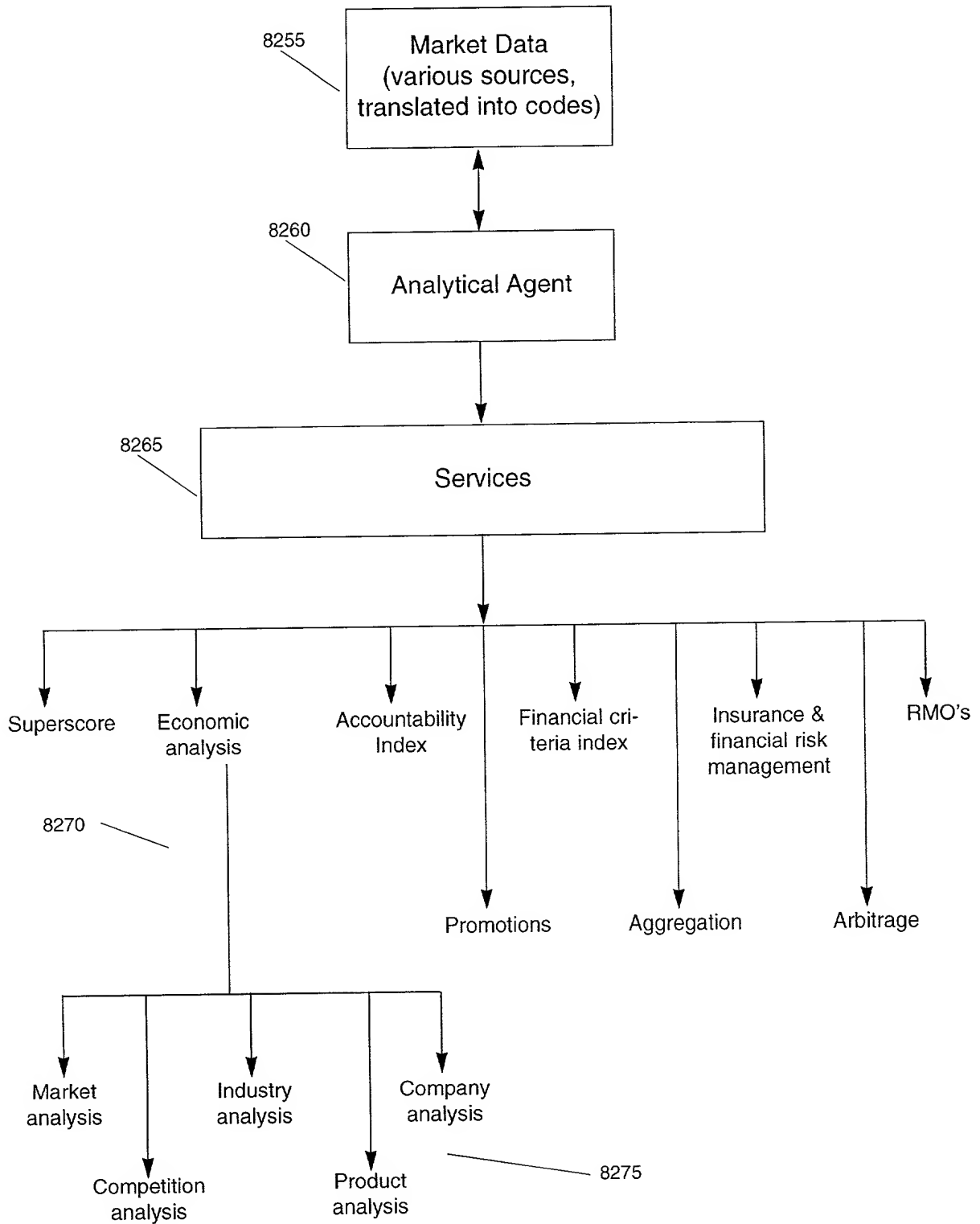


Fig. 84: Data Mining Approaches
CSA & AA interactions

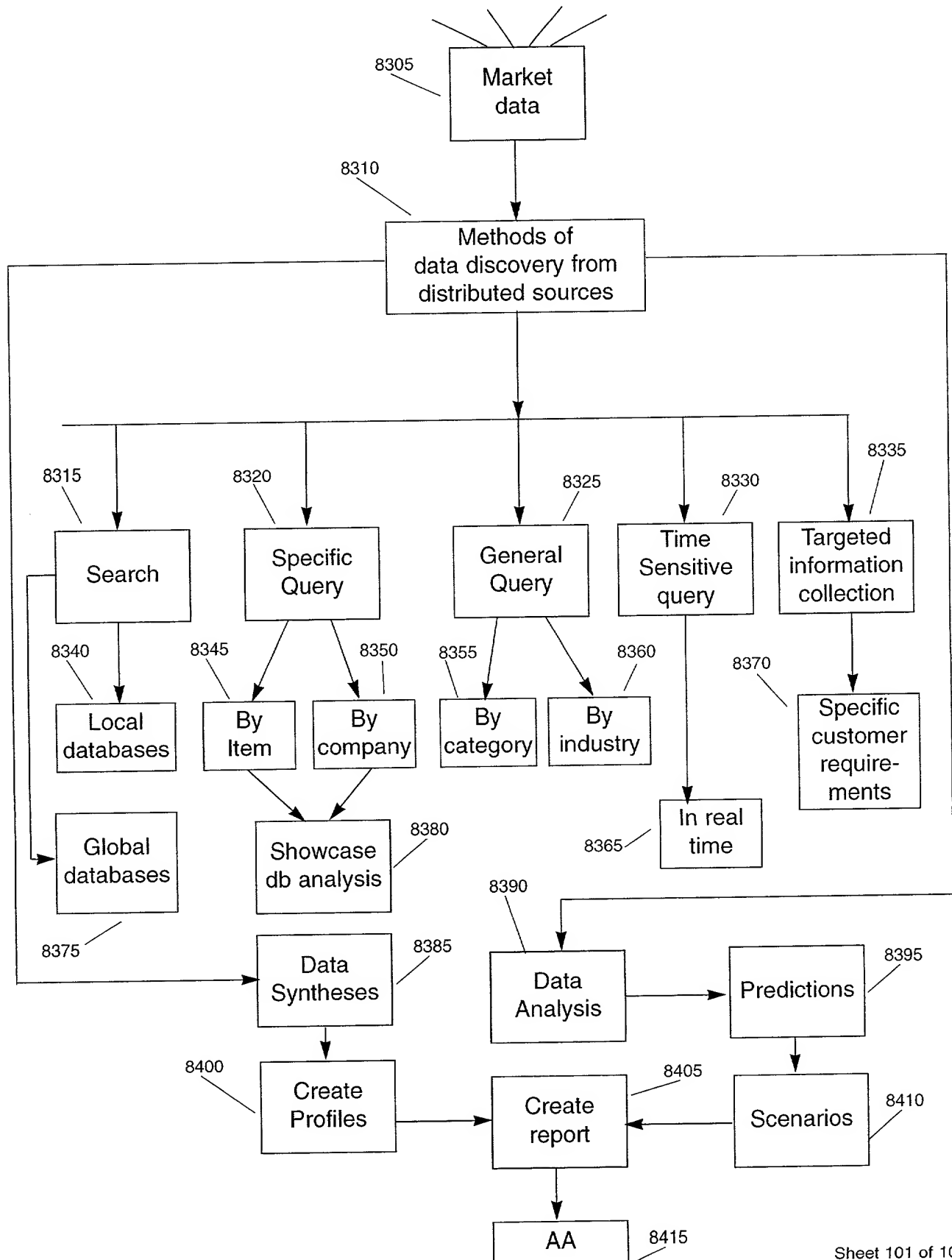


Fig. 86: B-AA Operations With Mobility

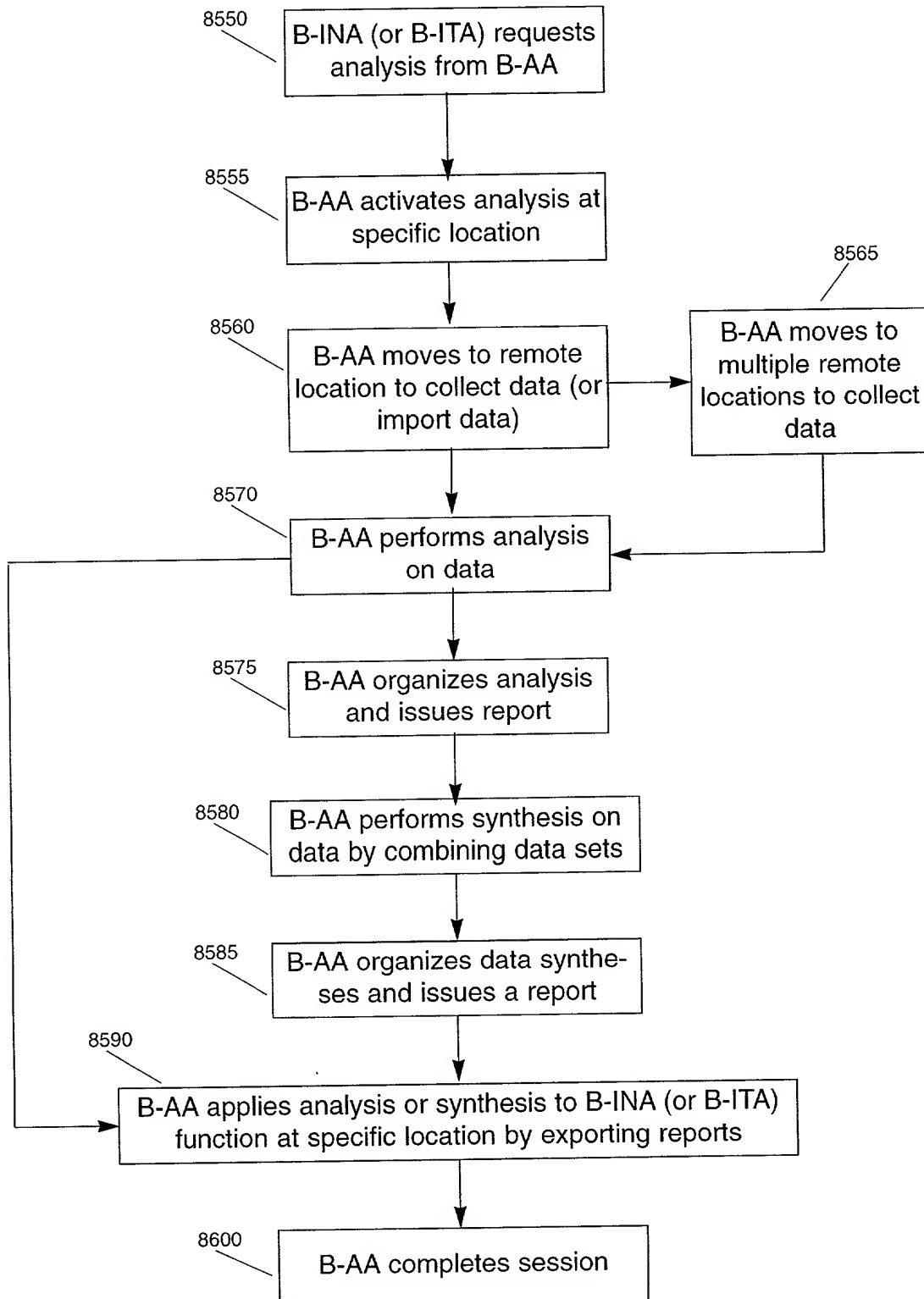


Fig. 87: Super-Score System: Negotiated Variables

1. Object Description – need reference to adaptable tables
2. Seller Description
3. Buyer Information
4. Buyer Credit Data
5. Finance opportunities – credit
6. Seller Promotions
7. Risk Management Options
8. Market Data on Multiple Sellers & Buyers

1 2 3 4 5 6 7 8

9. Industry Code
10. Unit Quantity
11. Unit Quality
12. Time to deliver
13. Bundling code — discounts
14. After Sales rating code
15. Quantity Code – each # signifies group category 1-100, 100-1000 etc.
16. Location of Negotiations

9 10 11 12 13 14 15 16

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Fig. 88: Economic/Market Analysis Variables

1. Industry Code
2. Industry Analysis
3. Product Analysis
4. Need Index of average prices for each main sector – trends, changes
5. Prices relative to market averages
6. Intra-company analysis of products/services – scope, growth rate change, etc. analysis of data
7. Probability scenarios of industry company
8. Broad Market Analysis (as service)
9. Economic indicators

1	2	3	4	5	6	7	8	9
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Fig. 89: Accountability Index System Variables

1. Bidding History
 - a. % bid
 - b. # of bids
 - c. % of bids won
 - d. # of bids won
2. Follow Up History
 - a. # & re-negs
 - b. # & returns
3. Credit History
 - a. credit limit
 - b. credit growth
4. Risk Factors
 - a. fast changes outside
5. Flexibility ratio
 - a. customer/seller as less rigid to accept deal
6. Tracking Pattern of Negotiation
 - a. figuring into accountability index
7. Transaction Prior Experiences
 - a. bidding history
 - b. success
 - c. problems
8. Follow through ratio
9. Accountability Index
10. Specify factors
11. Credit factors
 - a. debt ratio to net worth
 - b. paying on time
 - c. use up to limits, floating debt
 - d. credit limits
 - e. # of accounts
 - f. risk of default
12. Identify/authenticate agent/entity
13. Responsiveness to requests
 - a. In time factor

_____	_____	_____	_____	_____	_____	_____	_____
1	2	3	4	5	6	7	8
_____	_____	_____	_____	_____			
9	10	11	12	13			

Fig. 90: Financial Criteria Index System

30+ Digit Code

- 1. Net Worth
- 2. Income
- 3. Cash Flow
- 4. Level of Debt to net worth
- 5. Public records
- 6. Value of assets
- 7. How much credit limit is used
- 8. How often up to (or over) limit
- 9. Financial Criteria factors
- 10.Length of credit accounts
- 11. Credit Limit
- 12.Unsecured vs. Secured debt
- 13.Derogatory Credit – over limit past due
- 14.Number of moves
- 15.Frequency of Place
- 16.Final Index Number to put in Super Score

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

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Fig. 91: Insurance Risk Factors

- 1. Use of Stats to establish rates
- 2. Kinds of losses specified
- 3. Claim-Adjustment Procedures
- 4. Claims Procedures
- 5. Errors
- 6. Omissions
- 7. Fraud
- 8. Accident
- 9. Premium Accounts
- 10. Limits/amounts of insurance
- 11. Full vs. Partial losses
- 12. Entity past record of claims
- 13. Costs of losses
- 14. Risks of specific events
- 15. Risk of limited loss
- 16. Risk of total loss

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

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Fig. 92: List Of Services

1. ITA (Transactions)
 - a. Actual banking services
 - b. Aggregation (for better deals)
 - c. Insurance
 - d. Warranties
 - e. Payment Processing
 - f. Tax Collection & Payments
 - g. Escrow
 - h. Due Diligence
 - i. Legal, tax, customs
 - j. Compliance
 - k. Accounting
 - l. Shipping/delivery
 - m. Delivery tracking
 - n. Post-sale reporting
2. AA (Analysis)
 - a. Economic analysis
 - b. Market/industry analysis
 - c. Company, product & service analysis
 - d. Financial & credit analysis
 - e. Accountability Indices
 - f. Superscore
3. Risk Management Options
 - a. Penalties for sellers not fulfilling by specified time
 - b. Risk priorities – order of preferred risks
 - c. Arbitrage penalties
 - d. Option swaps (exchanging opposing kinds of risks)
 - e. Dynamic pricing of risks based on peak/low risks environment
 - f. MTO Penalties
 - g. JIT Penalties
 - h. Risk Sharing
4. Promotions (CSA)
 - a. Discounts
 - b. Aggregation (group discounts)
 - c. Promotional guarantees
 - d. Promise to provide item by specific time
 - e. Quality increase offer
 - f. Bundling products & services
5. Insurance Risk Management
 - a. Liability (product/service, business, individual)
 - b. Dynamic pricing based on peak risks
 - c. E&O Fraud risks
 - d. Risk of event loss
 - e. Re-insurance – Insurance risk sharing
 - f. Accident risks
 - g. Degrees of losses
6. Financial Risk Management
 - a. Credit analysis /buyer, seller
 - b. Secured debt – kinds of assets
 - c. Unsecured debt
 - d. Structured fin.-by asset category (securitization of assets/debt)
 - e. Packaging debt
 - f. Packaging Ins. & Fin. Opportunities
7. Additional Services
 - a. Bundling products &/or services
 - b. Customized orders
 - c. Mass-customization
 - d. Just-in-time items
 - e. Aggregation of bundles
 - f. Arbitrage of items & bundles
 - g. Computation resources
 - h. Bandwidth resources